

HELMINTHOLOGICAL ABSTRACTS

incorporating

BIBLIOGRAPHY OF HELMINTHOLOGY

COMPILED FROM WORLD LITERATURE OF 1954



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(HELMINTHOLOGY)**

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Vol. 23, Part 3

198—Acta Medica Scandinavica.

- a. GORDIN, R., 1954.—"Prothrombin in cryptogenetic pernicious anemia and pernicious tapeworm anemia and its response to treatment." 149 (1), 1-18.

(198a) Changes in plasma prothrombin were investigated in 47 cases of cryptogenetic anaemia and 42 cases of *Diphyllobothrium* anaemia. It was found that transient liver damage is sometimes involved in the former, less frequently in the latter. The lower incidence of hypothyroidism and the higher initial prothrombic values in *Diphyllobothrium* anaemia are probably due to its more acute character. Administration of tapeworm extract usually causes a rise in prothrombin. A similar effect follows successful anthelmintic treatment, but a marked, transient decrease is sometimes observed, probably due to liver damage caused by the treatment. M.MCK.

199—Acta Medicinæ Okayama.

- a. YAMAGUTI, S., 1954.—"Parasitic worms mainly from Celebes. Part 4. Trematodes of reptiles and birds." 8 (4), 329-340.
b. YAMAGUTI, S., 1954.—"Parasitic worms mainly from Celebes. Part 5. Trematodes of mammals." 8 (4), 341-352.
c. YAMAGUTI, S., 1954.—"Parasitic worms mainly from Celebes. Part 6. Cestodes of fishes." 8 (4), 353-374.
d. YAMAGUTI, S., 1954.—"Parasitic worms mainly from Celebes. Part 7. Cestodes of reptiles." 8 (4), 375-385.
e. YAMAGUTI, S., 1954.—"Helminth fauna of Mt. Ontake. Part 1. Nematoda and Acanthocephala." 8 (4), 386-392.
f. YAMAGUTI, S., 1954.—"Helminth fauna of Mt. Ontake. Part 2. Trematoda and Cestoda." 8 (4), 393-405.
g. YAMAGUTI, S., 1954.—"Parasitic worms from Celebes. Part 8. Acanthocephala." 8 (4), 406-413.

(199a) The trematodes *Cyathocotyle crocodili* n.sp., *Pseudoneodiplostomum* (*Pseudoneodiplostomoides*) *crocodili* n.subg., n.sp., and *Acanthostomum crocodili* n.sp. are reported from the small intestine of *Crocodylus porosus* in Celebes. *Cyathocotyle crocodili* differs from *C. fraterna* in having broader eggs and in the pharynx being larger than the oral sucker. The new subgenus *Pseudoneodiplostomoides* is characterized by sucker-like pits, one dorsal and in front of the genital cone, the other in the genital atrium; Yamaguti suggests referring *Neodiplostomum crocodilarum* Tubangui & Masilungan, 1936 to this subgenus. *Acanthostomum crocodili* most closely resembles *A. atae* but has only 23 oral spines and the vitellaria extend further back. *Plagiorchis maculosus* in *Sturnia philippensis* and *Passer montanus*, and *Echinochasmus baguli* in *Gorsakius goisagi* are recorded from Celebes. M.MCK.

(199b) In *Phaneropsolus simiae* n.sp. from a monkey in Celebes the cirrus pouch is about one-third the length of the body, compared with about two-thirds in *P. longipenis* and one-half in *P. oviformis*. *Galactosomum canis* n.sp. from a dog in Macassar (Celebes) differs from *G. sanaensis* and *G. anguillarum* in the structure of the genito-acetabular complex and in the extent of the vitellaria. Yamaguti refers to the frequent occurrence of immature *Fasciola hepatica* in livers, lungs and heads of buffaloes slaughtered at Macassar. He also records the presence in buffaloes in Celebes of *Fischoederius elongatus* and *Explanatum explanatum*, *Paramphistomum cervi*, *Calicophoron cauliorchis* and *Ceylonocotyle scoliocoelium*. M.MCK.

(199c) *Tetrarhynchus annandalei* Hornell, 1912 was found in the spiral valve of *Stegostoma tigrinum*; it is redescribed and made type of a new genus *Hornelliella* and a new family, the Hornelliellidae, which is characterized by a long series of muscle rings in the proboscis sheath and by a "hermaphroditic vesicle" receiving both cirrus and vagina and leading through a muscular duct to the genital atrium. *Balanobothrium stegostomatis* n.sp. from the large intestine of *S. tigrinum* differs from *B. parvum* in the length of the strobila and in the number of testes which range from 174 to 200 per proglottis. *B. tenax* from the same host is redescribed and the inclusion of *Balanobothrium* in the Onchobothriidae is confirmed. *Gyrometra albotaenia* n.g., n.sp., from the body-cavity of a *Diagramma* sp., is placed in the Gyrometrinae n.subf. within the Austramphilinidae which is emended. This cestodarian differs from *Gigantclina magna* in the course of the uterine limbs and is distinguished from *Austramphilina elongata* and *Chelodina longicollis* by its bilobed ovary, the extra-uterine disposition of the testes and the separation of male and female apertures. Two immature worms from the spiral valve of *Carcharias* sp. are assigned to the genus *Phoreiobothrium*. M.MCK.

(199d) Yamaguti records the following cestodes from reptiles in Celebes: (i) *Oochoristica celebesensis* n.sp. from *Mabuya* sp. is most closely related to *O. excelsa* and differs chiefly in the much larger scolex and suckers and in the absence of the receptaculum seminis; (ii) *Ophiovalipora micracantha* n.sp. from *Varanus salvator* is distinguished from *O. houdemeri* by the number of testes and by the poor development of the genital atrium; (iii) *Acanthotaenia shipleyi* from *V. salvator* is redescribed. Slight differences from the immature type specimen are noted (e.g. in the original description the vitellaria are recorded as an undifferentiated complex of genital ducts). M.MCK.

(199e) On Mount Ontake, Yamaguti found *Rhabdias montana* n.sp., distinguished by its greater size from *R. nipponica*, in the lung of *Rana temporaria ornativentris*. Descriptions are also given of a number of nematodes and acanthocephalans collected in the same locality from fishes, amphibians and mammals. Measurements of *Heterakis spumosa* in *Apodemus speciosus speciosus* are tabulated with those of previous workers. M.MCK.

(199f) Descriptions are given of a number of cestodes and trematodes collected at Mount Ontake, among which are several new forms. *Brachylaemus tokudai* n.sp. from the small intestine of *Urotrichus talpoides* is distinguished from the closely allied *B. heliciis*, *B. migrans* and *B. nicolli* by the failure of the uterus to reach the bifurcation of the intestine. *Hymenolepis apodemi* n.sp. from *Apodemus geisha geisha* differs from *H. pistillum* in the size of the strobila and the shape of the rostellar hooks. *Baerietta montana* n.sp. from the small intestine of *Bufo vulgaris japonicus* is very similar to *B. baeri* but is altogether larger and has 24-33 eggs per proglottis. *Baerietta claviformis* n.sp. from *Rana temporaria ornativentris* is distinguished from *B. japonica* by the larger size of the suckers (110 μ to 114 μ in *B. claviformis*, 54 μ to 84 μ in *B. japonica*). Several specimens from *Prunella collaris erythropygius* appeared to be identical with *Choanotaenia barbara*. Yamaguti draws attention to two possibly erroneous measurements given in the original descriptions and is of the opinion that *C. innominata* is probably a synonym of *C. barbara*. M.MCK.

(199g) From material collected in Celebes, Yamaguti redescribes *Filisoma indicum* from *Scatophagus argus*, and *Acanthocephalus bufonis* from *Rana tigrina* and *Bufo asper*. As *A. sinensis* differs only in embryo size from *A. bufonis*, it is considered to be a synonym. *Neoechinorhynchus longilemniscus* n.sp. from *Cynoglossus* sp. has extremely long lemnisci. *Rhadinorhynchus celebesensis* n.sp. is described from four immature males collected from the intestine of *Caranx* sp. and *Synagris* sp.; it is easily distinguished from *R. selkirki* and *R. carangis*. Specimens found in the small intestine of *Ophicephalus striatus* are assigned to *Pallisentis gaboes* provisionally as the original description is inadequate. From the arrangement of the proboscis hooks, Yamaguti suspects that three immature females found in the small intestine of *Gallus gallus* belong to the genus *Empodius*. M.MCK.

200—Acta Veterinaria. Budapest.

- a. BABOS, A., 1954.—“Über eine neue *Capillaria*-Art aus der Leber von *Triturus cristatus*.” 4 (2/3), 141–146. [Russian summary p. 146.]
- b. LÖRINCZ, F. & NEMESÉRI, L., 1954.—“Data concerning NaCl tolerance by *Trichinella* larvae.” 4 (2/3), 239–245. [Russian summary p. 245.]
- c. KOBULEI, T., 1954.—[Zur Kenntnis der Anatomie und Systematik der Gattung *Globocephalus* Molin (Nematodes).] 4 (2/3), 263–273. [In Russian: German summary p. 273.]

(200a) *Capillaria hepatophila* n.sp., diagnosed and figured from *Triturus cristatus* in the Budapest region, is twice the size of *C. tritonis*, the only other species of *Capillaria* recorded from this host. The eggs of the new species have thin, smooth, almost colourless shells and flattish polar plugs, while those of *C. tritonis* have thick, dark brown shells with a reticulate surface and the thick polar plugs are engirdled by the inner egg membrane. Embryonic development starts in the egg masses in the host's liver. The first larva forms within the egg-shell, hatches and bores into the bile-duct to reach the gall-bladder, the intestine and eventually is passed out in the faeces. During this migration the second-stage larva is developing. G.I.P.

(200b) *Trichinella spiralis* larvae, freed by artificial digestion from the musculature of infected rats, were placed into sets of isotonic solutions at 37°C. and the time of larval death determined. From the tabulated results of experiments using various concentrations it is shown that the larvae survived the longest time in glycerine and slightly less in sodium chloride; glucose and saccharose killed them more rapidly. Death of the larvae is not due to the higher osmotic pressure of the solution alone. The nature of the solute, particularly the molecular weight, appears to have some effect. G.I.P.

(200c) Kobulei gives a detailed description of *Globocephalus longemucronatus* Molin, 1861 and draws attention to the diagnostic value of the genital cone. He also gives a key to the seven known species of the genus. In *G. longemucronatus* the genital cone has one ventral and three dorsal tubercles, of which the ventral is narrower and longer than are the dorsal, and four papillae of equal size, whereas in *G. urosubulatus* the cone has one mammiform ventral and three dorsal processes as well as two shorter and two longer papillae. G.I.P.

201—Advisory Leaflet. Ministry of Agriculture and Fisheries. London.

- a. ANON., 1954.—“Stem and bulb eelworm on cereals and other farm crops.” No. 178, 6 pp. [Revision of leaflet published in 1942.]
- b. ANON., 1954.—“Cereal root eelworm.” No. 421, 4 pp.

202—Agricultural Gazette of New South Wales.

- a. ANON., 1954.—“Root-knot or root gall eelworm.” 65 (8), 429–430.

(202a) Root-knot is a serious pest of a great variety of plants [not named] in New South Wales. R.T.L.

203—American Fern Journal.

- a. MANN, Jr., M. D., 1954.—“A nematode disease of ferns.” 44 (2), 86–87.

(203a) *Aphelenchoides fragariae* is one of the most serious pests of ferns. Mann describes the symptoms and says that the most successful method of control known to him is the use of sodium selenate or some similar systemic insecticide used as recommended for chrysanthemums. M.T.F.

204—American Fruit Grower.

- a. REIMER, C. A. & DAVIDSON, J. H., 1954.—“Grow better strawberry plants.” 74 (4), 14–15, 39–40.

(204a) This is a popular account of eelworms and other diseases in strawberries, with particular emphasis on control by soil fumigation and the development of resistant stock. S.W.

205—American Journal of Digestive Diseases.

- a. SPIRO, H. M., SHROPSHIRE, C. N. & FUGELSO, E. S., 1954.—“Pseudo-hookworm: *Trichostrongylus infestation in man*.” 21 (3), 83–86.

(205a) Brief summaries are given of symptomless infections of *Trichostrongylus orientalis* contracted in the Japanese-Korean archipelago by three sergeants of the United States army and two native war brides. No therapeutic treatment had any effect. The ova of *T. orientalis* are so similar to those of hookworm that failure in diagnosis may cause infected persons to undergo unnecessary, prolonged and ineffective treatment. The *Trichostrongylus* ovum measures $90\mu \times 45\mu$ whereas the hookworm ovum is $64\mu \times 41\mu$. The shell is thicker and greener. In fresh stools the ovum has already divided into 16 cells whereas in the hookworm they number one to four.

R.T.L.

206—American Journal of Hygiene.

- a. JACHOWSKI, JR., L. A., 1954.—“Filariasis in American Samoa. V. Bionomics of the principal vector, *Aedes polynesiensis* Marks.” 60 (2), 186–203.

(206a) As *Aedes polynesiensis* is an important pest as well as the principal vector of non-periodic filariasis in the American Samoa Islands, its bionomics were studied in a laboratory colony bred from eggs imported from American Samoa. The adult female survived for an average of 21.2 days at 80°F. and in a high relative humidity. Although man is the preferred host it will feed on dogs, horses, pigs and laboratory animals. Larval development required 6–9 days at 80°F. in the laboratory. The mean age when the first blood meal was taken was 3.3 days and successive meals were taken at intervals of about a week. The average blood meal weighed approximately 1.8 mg. The bite was relatively painless.

R.T.L.

207—American Journal of Tropical Medicine and Hygiene.

- a. CHAFFEE, E. F., BAUMAN, P. M. & SHAPILO, J. J., 1954.—“Diagnosis of schistosomiasis by complement-fixation.” 3 (5), 905–913.
b. HORSTMAN, JR., H. A., CHAFFEE, E. F. & BAUMAN, P. M., 1954.—“Schistosomiasis mansonii in Puerto Rican soldiers.” 3 (5), 914–917.
c. JUNG, R. C., 1954.—“Use of a hexylresorcinol tablet in the enema treatment of whipworm infection.” 3 (5), 918–921.

(207a) Chaffee, Bauman & Shapilo prepared an improved antigen for the complement fixation test by extracting desiccated adult schistosomes with anhydrous ether at 15°C. to 18°C. prior to final extraction with buffered salt solution. Complement fixation tests with serum from Puerto Ricans infected with *Schistosoma mansoni*, using antigens prepared from both ether-extracted and untreated *S. mansoni*, revealed no appreciable difference in the capacity of the antigen to fix complement specifically. Tests on syphilitic patients showed that the preliminary extraction with ether markedly reduced the tendency of the antigen to react with syphilitic serum. To obtain an estimate of the species specificity of the serologic reaction, sera from six patients with *S. haematobium* and six with *S. mansoni* were tested with antigens prepared from the homologous and heterologous species of worms. Sera from the two closely related infections could not be differentiated on the basis of their reactivity with antigens from the homologous and heterologous parasites. The complement fixation test is discussed from the point of view of its value in the diagnosis of schistosomiasis.

D.L.H.R.

(207b) Horstman, Chaffee & Bauman investigated the incidence of infection with *Schistosoma mansoni* among asymptomatic Puerto Rican troops and made a comparison of the stool examination, complement fixation and intradermal tests as screening tests. Of the 276 soldiers examined 18.8% had stools positive for ova, 45% showed a positive intradermal test and 43.5% showed a positive complement fixation test. The authors conclude that although a positive complement fixation or intradermal test does not necessarily indicate an active infection, they appear to be good screening tests and are simple to perform.

D.L.H.R.

(207c) Jung used tablets, each containing 0.4 gm. of hexylresorcinol, to treat twenty-two patients infected with *Trichuris trichiura*. After treatment with a hexylresorcinol retention enema prepared from the tablets, sixteen patients with heavy whipworm infections were improved in three respects. In the twelve instances in which egg counts were done after treatment, there was a marked reduction amounting to a decrease of from 80% to over 99%. In one case the infection was apparently eradicated. Symptoms of diarrhoea or dysentery were relieved and worms were eradicated from the portion of the bowel seen on proctoscopy. In the case of six patients in which the worm burden was light, the hexylresorcinol enema gave no obvious benefit. It was concluded that the hexylresorcinol enema made from tablets is as effective as that prepared from the powder and is more easily prepared. D.L.H.R.

208—American Journal of Veterinary Research.

- a. LEVINE, N. D. & IVENS, V., 1954.—“The effects of some phenothiazine derivatives and analogs on the free-living stages of horse strongyles.” 15 (56), 349–351.
- b. BAKER, N. F., LONGHURST, W. M., TORELL, D. T. & WEIR, W. C., 1954.—“Preliminary studies of parasitism in sheep on rangelands.” 15 (56), 356–360.
- c. VEGORS, H. H., 1954.—“Experimental infection of calves with *Strongyloides papillosus* (Nematoda).” 15 (56), 429–433.
- d. REFUERZO, P. G. & ALBIS-JIMENEZ, F. S., 1954.—“Studies on *Neoascaris vitulorum*. II. The resistance of the ova to certain chemical agents and physical factors under tropical conditions.” 15 (56), 440–443.

(208a) Phenothiazine at a concentration of 0.025 M. when tested against horse strongyle larvae and eggs in faeces was found to kill or prevent development of larvae and eggs. Phenoxathiin and chlorophenoxathiin were found active at a concentration of 0.025 M., pyocyanin dihydrochloride at 0.005 M., phenazine and phenoxazine at 0.01 M. and xanthidrol at 0.05 M. Also hexyl-iso-octyl amine and di-*n*-hexyl amine were toxic at 0.01 M. Substitution on the nitrogen atom of phenothiazine destroyed or decreased its toxicity, as did also replacement of one of the heterocyclic atoms of phenothiazine by a carbonyl group, and the other by an oxygen atom or a methylene group. D.M.

(208b) A study of sheep parasitism on the Hopland Field Station, University of California is reported. *Ostertagia circumcincta* is the most common stomach worm in the area, while *Trichostrongylus vitrinus*, *Nematodirus filicollis* and *N. spathiger* are the most common parasites of the small intestine. Phenothiazine proved totally ineffective as an anthelmintic and it was impossible to determine the relationship between nutrition and parasitism, or the value of medication as used. This failure was concluded to be due, possibly, to the high percentage of large particle sizes in the phenothiazine used. D.M.

(208c) The number of eggs recovered from the faeces of calves infected orally with *Strongyloides papillosus* was negligible compared with the recovery from those infected percutaneously. Calves infected when 4–5 months old survived infection longer than those infected at an earlier age, and the lowest exposure associated with death was one million larvae. Very young calves were fatally affected by a single exposure of 200,000 larvae. An acquired immunity was shown by calves upon re-exposure to larvae. Infection usually resulted in intermittent diarrhoea, sometimes mucoid and bloody, loss of appetite and condition and retardation of growth. The worms produced a catarrhal inflammation with petechial and ecchymotic haemorrhages, especially in the duodenum and jejunum. D.M.

(208d) Non-embryonating clean eggs of *Neoascaris vitulorum* have a low resistance to direct tropical sunlight and are destroyed in 5 hours 35 minutes on bare ground at temperatures between 34°C. and 42°C. Most infective larvae are still viable after this exposure. Ova protected by the stool can survive longer periods of exposure, the time varying inversely with the temperature but directly with the size of the faecal mass, rainfall and amount of vegetation. The ova are resistant to desiccation and to the usual concentrations of chemical disinfectants, but hot water at 92°C. and over is highly lethal to clean eggs although only partially effective against eggs in faecal lumps. Results show that pastures may be grazed every three to four months in the Philippines, without fear of re-infection. D.M.

209—Anales del Instituto de Biología. Mexico.

- a. BRAVO H., M., 1954.—“ Tremátodos de peces marinos de aguas mexicanas. VII.” 25 (1/2), 219-252.
- b. CABALLERO Y C., E. & ZERECERO D., M. C., 1954.—“ Helmintos de la República de Panamá. XI. Descripción de una nueva especie del género *Telorchis* (Trematoda : Digenea).” 25 (1/2), 253-258.
- c. CABALLERO Y C., E., 1954.—“ Estudios helmintológicos de la región oncocercosa de México y de la República de Guatemala. Nematoda, 8a. parte.” 25 (1/2), 259-274.

(209a) The following species of trematodes from marine fishes taken from the Mexican waters of the Pacific Ocean are redescribed and figured: *Pseudopecoeloides carangi*, *Helicometrina nimia*, *Maculifer japonicus*, *Stephanostomum hispidum*, *Manteria brachydera*, *Haplospilanchus sparismoe*, *Petalodistomum pacificum* and *Sclerodistomum diodontis*.
R.T.L.

(209b) *Telorchis grocotti* n.sp. is recorded from *Kinosternon panamensis* at Arraiján, Panama. It is characterized by a long oesophagus; the vitelline glands are segregated into numerous small compact groups. The pair of smooth testes lie between the caeca near their distal ends.
M.MCK.

(209c) Succinct descriptions are given of *Rhabdias fülleborni* from *Rana* sp. and *Bufo horribilis*, *Rhabdias vellardi* and *Kalicephalus macrovulvus* n.sp. from *Agkistrodon bilineatus* and *K. chitwoodi* n.sp. from *Constrictor imperator*. *K. macrovulvus* differs from *K. viperæ* in having a leaf-shaped and poorly chitinated gubernaculum, wide arched externo-dorsal rays penetrating the lateral lobes of the bursa and a ventral ray of which branches are united for most of their length. *K. chitwoodi* is distinguished from those species with divergent uteri by a long, wide and foot-like chitinous gubernaculum, with a digitiform prolongation at the proximal end and with a slight knob at the distal end. It is also distinguished by the stout dorsal ray which gives off thick, arched externo-dorsals near the base and then divides on each side with an external branch and an internal dichotomous branch which almost reaches the edge of the bursa. In addition to these four species from Guatemala, *Monopetalonema solitarium* is recorded from a bird locally known as “huitzil” in Mexico.
M.MCK.

210—Animal Health Leaflet. Ministry of Agriculture and Fisheries. London.

- a. ANON., 1954.—“ Worms in poultry.” No. 22, 5 pp. [Revision of leaflet published in 1952.]

211—Annales de l'Institut Pasteur. Paris.

- a. LAMY, L. & LAMY, H., 1954.—“ Données actuelles sur le parasitisme intestinal et sanguin des différentes populations africaines de l'agglomération de Brazzaville.” 86 (4), 465-478.

(211a) The authors have made a survey of intestinal and blood parasites in different native populations in three parts of Brazzaville, namely, Poto-Poto, Baongo and Ouenzé. The incidence in each district is tabulated. The overall incidence was: *Ascaris* 13.5% in children under one year old, 55% in children of more than one year and 43% in adults; hookworm 13.5%, 69% and 69% respectively; *Trichuris*, 4%, 10.3% and 6.2%. No distome ova were found and no autochthonous case of schistosomiasis. Cestodes are not reported on in this paper. Microfilariae were found in 10% to 15% of the adults but although 1,100 blood examinations were carried out on children only two positive cases, both in 12-year-old boys, were found. *Acanthocheilonema perstans* was the more common species although *Loa loa* also occurred.
S.W.

212—Annales Medicinæ Experimentalis et Biologiæ Fenniae.

- a. ANTTONEN, V. M., 1954.—“ Flavaspidic acid as an anthelmintic.” 32 (1), 15-25.

(212a) Flavaspidic acid was administered orally to 76 patients harbouring tapeworms, 68 of which had further complicating diseases. The seven cases of *Taenia saginata* and 58 of the 69 *Diphyllobothrium latum* cases were cured. The optimum dosage, a single dose of

0.5-0.8 gm., is given on an empty stomach; after two hours 25 gm. of magnesium sulphate is given, followed two hours later by an enema. Sometimes a second dose is necessary. Slight toxic effects were observed in the patients intolerant to male fern extract, or suffering from hepatopathy or coronary thrombosis. In such cases doses of less than 0.5 gm. are recommended. Doses of 1.0 gm. may produce dangerous side effects.

M.MCK.

213—Annales de Parasitologie Humaine et Comparée.

- a. CHABAUD, A. G., 1954.—"Sur le cycle évolutif des spirurides et de nématodes ayant une biologie comparable. Valeur systématique des caractères biologiques (suite)." 29 (3), 206-249.

(213a) Continuing his work on development and phylogenetic relationships of the spirurids and allied forms [for abstract of previous paper see Helm. Abs., 23, No. 7b], Chabaud presents detailed and illustrated accounts of the adults and larvae of *Sicarius dipterum*, *Hadjelia truncata*, one species of *Hebromma*, three species of *Agamespirura*, *Synhimantus* (*Desportesius*) *spinulatus*, *Abbreviata caucasia* and two other species of *Abbreviata*, and *Dipetalenema blanei*. Of especial interest are the observations on *D. blanei* including the demonstration of extreme specificity for its intermediary and the shortening of the life-cycle in this species; the second-stage larva remains, for the whole of its development, enclosed in the cuticle of the first-stage larva and when ecdysis occurs it corresponds physiologically to two ecdyses superimposed. In *Spirura* it is the fourth-stage larva which is the sexual form, whereas in *D. blanei* the sexual form seems to correspond with the adult. Although the development in the intermediary is comparatively slow, there is no sausage-stage larva. The work is being continued.

S.W.

214—Annals of Tropical Medicine and Parasitology.

- a. McCULLOUGH, F. S. & DUKE, B. O. L., 1954.—"Schistosomiasis in the Gambia. I. Observations on the potential snail vectors of *Schistosoma haematobium* and *S. mansoni*." 48 (3), 277-286.
- b. DUKE, B. O. L. & McCULLOUGH, F. S., 1954.—"Schistosomiasis in the Gambia. II. The epidemiology and distribution of urinary schistosomiasis." 48 (3), 287-299.
- c. KENDALL, S. B., 1954.—"Fascioliasis in Pakistan." 48 (3), 307-313.
- d. ROSEN, L., 1954.—"Observations on *Diofilaria immitis* in French Oceania." 48 (3), 318-328.
- e. KERSHAW, W. E., CHALMERS, T. A. & DUKE, B. O. L., 1954.—"Studies on the intake of microfilariae by their insect vectors, their survival, and their effect on the survival of their vectors. IV. The survival-rate of *Chrysops* under laboratory conditions, and the effect upon it of *Loa loa*." 48 (3), 329-339.
- f. KERSHAW, W. E. & DUKE, B. O. L., 1954.—"Studies on the intake of microfilariae by their insect vectors, their survival, and their effect on the survival of their vectors. V. The survival of *Loa loa* in *Chrysops silacea* under laboratory conditions." 48 (3), 340-344.

(214a) McCullough & Duke observed that in the Gambia *Bulinus africanus*, *B. truncatus* and *Biomphalaria alexandrina pfeifferi* were largely confined to the two eastern divisions where their distribution was local rather than widespread. *Bulinus truncatus* was more numerous than *B. africanus* although both were found in the same habitat and appeared to feed on the same type of food. *B. forskalii* was the most widespread of the Bulinae in Gambia and was found in both clear and stagnant water. It is suggested that they are more resistant to drought as they were recorded from ponds known to dry up for over five months of the year. Evidence is presented which shows that *B. forskalii* is susceptible to infection with *Schistosoma haematobium* and it is suggested that the species is probably an important snail host in Gambia. *B. truncatus* of Gambian origin were found to be susceptible to infection with *S. haematobium* from the Gold Coast and may be a natural intermediate host for many schistosomes in Gambia.

D.L.H.R.

(214b) Duke & McCullough examined over 1,200 individuals from 37 villages in Gambia for infection with *Schistosoma haematobium*, paying special attention to the incidence among children between the ages of three and fifteen years. Distribution of *S. haematobium* was found to be closely linked with topography and the distribution of the snail hosts. A detailed

investigation of the age incidence and intensity of infection among villagers of different tribes was made in the McCarthy Island division. In the Bansang area a striking difference was found between the infection rates for the swamp villages and those for the villages on the laterite plateau, the respective average figures being 12.4% and 72.7% for children and 14.2% and 38.8% for adults. It is suggested that the infections were acquired extraneously in the swamp villages and from the standing water in ponds on the plateau which contain a large and thriving population of *Bulinus forskalii*. In the Upper River Division the infected area extended more or less uniformly from the river bank to the frontier. In the Central and Western Divisions endemic infection was almost completely absent, due to the salinity of the water, the absence of laterite ponds and the scarcity of snails. The transmission season was found to vary from place to place but probably only lasts for four to five months of the year. The effects on the population were considered to be mild.

D.L.H.R.

(214c) Kendall found that *Fasciola gigantica* was by far the predominant species of *Fasciola* in live-stock in Pakistan except in the highland areas where it is replaced by *Fasciola hepatica*, and on the boundaries of the highland areas where mixed infections of the two species occur. In the low lying deltaic areas of greatest liver-fluke infestation the identification of the snail vector of *F. gigantica* resolved itself into the separation of *Limnaea luteola*, which probably does not transmit the fluke, from the various forms of *L. auricularia rufescens* all of which are likely to transmit the infection. For the survival of this snail clean water appeared to be essential and it was usual to find it in close association with aquatic plants. *L. truncatula* was never found below 4,000 feet in Pakistan and occupied habitats similar to those in Europe. It is suggested that throughout the world all the snail hosts of *F. hepatica* and all the snail hosts of *F. gigantica* are likely to correspond respectively, both in form and in oecology, with the snails *L. truncatula* and *L. auricularia sensu lato*. Kendall also briefly discusses methods of control of the parasite.

D.L.H.R.

(214d) Rosen found that in the three archipelagos studied in French Oceania, 40% of dogs examined had microfilariae of *Dircofilaria immitis*. Most of these had more than 100 microfilariae per 20 cu. mm. of blood. Dissection of field-caught mosquitoes showed a higher prevalence of larvae in *Culex annulirostris* (2.5%) and *Aedes edgari* (2.1%) than in *A. polynesiensis* (0.7%) but in the laboratory *A. polynesiensis* was found to be highly susceptible (83.3%). It was found that the longevity of *A. polynesiensis* was adversely affected by developing larvae and that the parasite generally exerted its most deleterious effects during the first few days after a blood meal. Microfilariae were frequently found in the guts of *Ctenocephalides* sp. from dogs, but more advanced forms of the parasite were not encountered. The type of periodicity observed for *D. immitis* in this area closely resembled that found in other parts of the world where the parasite occurs.

D.L.H.R.

(214e) Kershaw, Chalmers & Duke found that for ten days after a blood meal the mortality rate of uninfected *Chrysops silacea*, flies fed on boys infected with *Acanthocheilichnema* only, and flies fed on individuals infected with both *A. perstans* and *Loa loa* was similar, but that after that time the mortality of the uninfected flies diminished. It appeared, however, that the transmission to the definitive host of the infective form of *L. loa* after development in *Chrysops* is associated with a high mortality rate of flies. It was also found that the survival of a wild-caught population follows a curve in which the rate of mortality increases in such a way that the logarithm of the rate is directly proportional to age.

D.L.H.R.

(214f) Kershaw & Duke presented the results of previous experiments so as to demonstrate the survival of the ingested microfilariae of *Loa loa* throughout the development in the fly. Wild-caught *Chrysops silacea* were allowed to feed on individuals whose peripheral circulation was known to contain microfilariae of *L. loa*. Some flies were dissected immediately after feeding; others were maintained in the laboratory until they died and then dissected. In all cases the numbers of microfilariae and developing or infective larvae were counted. The results showed that the number of developing larvae found in the flies was proportional to the length of time for which the fly survived. It was concluded that the individual flies

making up a composite population in nature and allowed to feed to repletion in the laboratory have individual and different chances of survival and associated different abilities to support the development of a parasite. The number of infective forms found in flies which survived long enough to support the development of the infective form was similar to the number of microfilariae taken in.

D.L.H.R.

215—Arborist's News.

- a. SASSER, J. N., 1954.—“Nematodes affecting trees and shrubs.” 19 (7), 53–56.

(215a) This is a popular article in which Sasser explains what a nematode is, describes the above-ground symptoms and the damage to the roots caused by nematodes and mentions the various genera which have been found associated with damage to trees and shrubs. He gives general recommendations for control and indicates the lines of research needed. M.T.F.

216—Archiv für Hygiene und Bakteriologie.

- a. DENECKE, K., 1954.—“Die Helminthosen im Irak.” 138 (2), 149–156. [English & French summaries p. 156.]

(216a) Worm diseases are widespread in Iraq, lowering the work output and the standard of living of the population and are largely due to poor hygiene. In the autumn of 1953, out of 800 faecal examinations made at the hospital in Hillah, near the river Euphrates, 13.2% were positive for *Ascaris lumbricoides*, 1.4% for *Trichuris trichiura*, 7.4% for *Strongyloides stercoralis*, 30% for *Ancylostoma duodenale* and 0.75% for *Hymenolepis nana*. Only one person harboured *Taenia saginata*. *Dracunculus medinensis* infections are rare in the steppes but numerous in the desert. *Schistosoma haematobium* was present in 14.6% of 750 urine samples taken at the hospital but only in 4.9% of Hillah schoolchildren. Schistosome infections are spread by the irrigation system in the south of Iraq. Attempts to eradicate the snail population by treating the canal systems with copper sulphate proved unsuccessful. Eggs of *S. haematobium* were also found in dogs, camels and water buffaloes. The total number of cases treated in State centres rose from 15,852 to 27,388 during the years 1944 and 1949 and it was estimated that of the 5 million population of Iraq 200,000–250,000 were chronic bilharzia cases. In the same years the number of cases treated for *A. duodenale* ranged between 6,332 and 13,912. Hookworm and bilharzia caused chronic, secondary anaemia, aggravated by a low protein and vitamin B diet. Increased numbers of eosinophils, as expected in heavy worm infections, were not found.

G.I.P.

217—Archives Françaises de Pédiatrie.

- a. CHAROCOPOS, S. A. & INGLESSI, E., 1954.—“Considérations sur la fréquence de l'échinococcose en Grèce, en particulier chez l'enfant.” 11 (2), 151–156.

(217a) Hydatidosis is very common in Greece and has increased there during the last twelve years. From 1945 to 1949, 7.37% of 100,000 inhabitants were found to be infected. Among the patients admitted to two large children's hospitals in Athens between 1900 and 1952, one in every 313 (0.319%) were infected. The lungs were involved in 61.6% of 123 cases observed in one of the hospitals. Southern Greece (Attica, Peloponnese, Roumelia) and certain islands (Cephalonia) were the most heavily infected regions.

R.T.L.

218—Archives de l'Institut Pasteur d'Algérie.

- a. SIMITCH, T. & KECKAROVSKA, J., 1954.—“Infestation de *Citellus citellus* par *Hymenolepis nana* à partir de cysticercoïdes et de parasites adultes.” 32 (2), 103–106.

(218a) Simitch & Keckarovska have successfully infected *Citellus citellus* with *Hymenolepis nana* by feeding them with ova or with cysticercoïdes. More adult cestodes were collected from the rodents infected with ova than from those given cysticercoïdes. The successful infections with cysticercoïdes were obtained, in all but one case, with those 48 hours old. S.W.

219—Archives de l'Institut Pasteur de la Guyane Française.

- a. FLOCH, H. & FAURAN, P., 1954.—“ Bilharziose intestinale et *Tropicorbis kühni* (Clessin) en Guyane Française.” XV Année, No. 325, 7 pp.

(219a) [This paper is substantially the same as one published by the authors in *Bull. Soc. Path. exot.*, 1954, 47, 452-459. For abstract see *Helm. Abs.*, 23, No. 88m.]

220—Archives des Maladies de l'Appareil Digestif et des Maladies de la Nutrition.

- a. BOURGEON, R., PIETRI, H. & GUNTZ, M., 1954.—“ Intérêt de la splénoportographie transplénique dans l'échinococcose hépatique.” 43 (2), 168-178.
 b. CLAISSE, R. & HARTMANN, L., 1954.—“ Caractères biologiques, sérologiques et histologiques de la distomatose hépatique (à propos de deux cas).” 43 (2), 197-205. [Discussion p. 205.]
 c. MORIN, J., 1954.—“ Aspects nouveaux de l'ankylostomose.” 43 (3), 360-363.

221—Archivos de Pediatría del Uruguay.

- a. PÉREZ FONTANA, V., 1954.—“ Hidatidosis en la infancia con especial referencia a su aspecto médico-social.” 25 (3), 173-198. [English & French summaries pp. 197-198.]

222—Australian Journal of Zoology.

- a. BUNT, J. S., 1954.—“ The soil-inhabiting nematodes of Macquarie Island.” 2 (2), 264-274.
 b. ROBERTS, F. H. S., TURNER, H. N. & McKEVETT, M., 1954.—“ On the specific distinctness of the ovine and bovine 'strains' of *Haemonchus contortus* (Rudolphi) Cobb (Nematoda: Trichostrongylidae).” 2 (2), 275-295.

(222a) Bunt has made an evaluation, in general terms, of the importance of soil-inhabiting nematodes under the relatively severe conditions of a range of samples of sub-antarctic soils from 42 different localities in Macquarie Island. The principal conditions affecting the nematode populations and activities are discussed. Their numbers do not appear to be seriously limited by the temperature or water relations of the soil except indirectly by controlling the food supply which is largely bacterial or algal. The quantitative distribution may be largely dependent on the character of the microflora in any given environment. There was a twenty-fold increase in the nematodes four weeks after a penguin rookery had been established. An attempt was made to assess the relative importance of nematodes in organic decomposition in the soil.

R.T.L.

(222b) It is shown that *Haemonchus contortus* (Rudolphi, 1803) Cobb, 1898 of sheep and that of cattle are distinct species. The name *H. contortus* is retained for the former and *H. placei* (Place, 1893) Ransom, 1911 adopted for the latter. This conclusion is based on an extensive morphological study of the adults and infective larvae of the parasites from these two hosts. There are significant differences in the total length of the spicules and in the distances from both their right and left hooks to the tip. These three features are larger in the cattle than in the sheep species. In the cattle species there was no correlation between hook distance and spicule length. The differences between infective larvae from natural infections in cattle and sheep are clear cut and the larvae can be distinguished visually without difficulty. In total length, tail length and ratio of total length to tail length the larvae from cattle have the greater measurements and smaller ratio; these were not altered by a change of host.

R.T.L.

223—Berliner und Münchener Tierärztliche Wochenschrift.

- a. BOCH, J., 1954.—“ Histologische Untersuchungen der Dünndarmschleimhaut nach Verabreichung von Vermizym zur Wurmbekämpfung.” 67 (22), 365-367. [English summary p. 367.]

(223a) Histological studies, complementary to investigations on Vermizym as an anthelmintic in doses of 1 gm. per kg. body-weight repeated twice or thrice, showed that it had no direct deleterious effect on the mucous membrane of the small intestine of mice, cats and

rabbits. After the fifth dose there was some epithelial desquamation which disappeared after five days and there were no clinical reactions.

R.T.L.

224—*Biochimica et Biophysica Acta.*

- a. CHIN, C. H. & BUEDING, E., 1954.—“Occurrence of oxidative phosphorylations in the muscle of *Ascaris lumbricoides*.” 13 (3), 331–337. [French & German summaries p. 337.]

225—*Biologie Médicale.*

- a. JOYEUX, C., 1954.—“Quelques travaux récents sur l'épidémiologie des héminthiases.” 43 (1), 1–36.

(225a) Joyeux reviews 75 recent publications by various authors on the epidemiology of helminth infections in man under the following headings: bilharziasis, fascioliasis hepatica, tapeworms, hydatid, enterobiasis, trichinelliasis in the Arctic North, strongyloidiasis, nematodes of herbivores, filarial infections and onchocerciasis.

R.T.L.

226—*British Journal of Pharmacology and Chemotherapy.*

- a. MANSOUR, T. E., BUEDING, E. & STAVITSKY, A. B., 1954.—“The effect of a specific antiserum on the activities of lactic dehydrogenase of mammalian muscle and of *Schistosoma mansoni*.” 9 (2), 182–186.

(226a) Serum from roosters immunized against lactic dehydrogenase from rabbit muscle markedly inhibited the action of this enzyme; the serum had no effect on lactic dehydrogenase from *Schistosoma mansoni* or *S. japonicum*. The enzymes from these two sources cannot therefore be identical although they catalyse the same reaction.

M.MCK.

227—*British Medical Journal.*

- a. REARDEN, J., 1954.—“Piperazine in treatment of roundworm.” [Correspondence.] Year 1954, 2 (4892), 872–873.
b. GOODWIN, L. G. & STANDEN, O. D., 1954.—“Treatment of roundworm with piperazine citrate ('antepar').” Year 1954, 2 (4900), 1332–1333.

(227a) Piperazine adipate tablets were effective in the treatment of *Ascaris*. In a country district in County Cork, 87 cases of roundworm infection have been recorded during the past four years in patients whose ages varied from six months to 64 years. Of these cases, 16 children were treated with piperazine adipate and all appeared subsequently to be cured. The average dose was one tablet per day for each year of the life of the child up to six years. Those over six years were given two tablets three times a day, administration in all cases being for one week.

D.M.

(227b) Field trials at Kasulu in a highly endemic area of Tanganyika have confirmed the efficacy of piperazine citrate as a vermifuge for *Ascaris lumbricoides* when given in a single large dose: 3 gm. is sufficient for adults and for children over 20 kg. body-weight, but for small children the dose should be reduced to 2 gm. The drug had no effect on hookworm or *Strongyloides*.

R.T.L.

228—*British Sugar Beet Review.*

- a. DUNNING, R. A., 1954.—“Beet stem eelworm. Some results of preliminary work.” 22 (4), 161–166.

(228a) *Ditylenchus dipsaci* attacks sugar-beet causing “canker” in the mature root. Attack begins in the seedling where leaf distortion and galling occur. When the growing point is attacked lateral buds develop and a multiheaded plant results. In 1953 infestation possibly derived from previous host crops on the fields, although the weather may have had some relation to the widespread incidence of attack. The effect on the value of the crop was slight. Control by good husbandry and selective singling is suggested.

J.B.G.

229—British Veterinary Journal.

- a. PARNELL, I. W., DUNN, A. M. & MACKINTOSH, G. M., 1954.—“Some observations on the ‘spring rise’ in worm-egg counts of Halfbred sheep in south-east Scotland.” 110 (5), 185–193.

(229a) The authors have shown that the date of parturition of Halfbred ewes in south-east Scotland has a marked influence on the date of the “spring rise” in worm egg output. It seems therefore that until safe anthelmintics are available which will remove the immature stages, the practice of dosing ewes before lambing does not normally aid them to any great extent. *Trichostrongylus* spp. are the commonest and most prominent contributors to the “spring rise”. It is suggested that on many farms the contamination of pastures in the previous year is a greater cause of infestation than is the passing of *Nematodirus* eggs in the faeces by ewes during the winter and spring. A method of treating ewes to reduce their worm burden before they leave the lambing field is proposed. Helminth parasitism must be controlled before it can affect the condition of the lambs otherwise their market value will be lost.

D.M.

230—Bulletin de l'Académie Nationale de Médecine. Paris.

- a. TOULANT, P. F. & BOITHIAS, R., 1954.—“Les lésions vasculaires de la rétine dans l'onchocercose africaine.” 3e Série, 138 (9/10), 141–145.
b. DESCHIENS, R., 1954.—“Sur un test d'activité anthelminthique des médicaments.” 3e Série, 138 (11/13), 184–185. [Discussion pp. 185–186.]

(230a) Toulant & Boithias describe in detail the development of the lesions in the blood vessels supplying the retina which are caused by onchocerciasis. In the early stages, one or more branches of the central artery of the retina may be affected, becoming pitted and developing a white fibrous sheath which gradually thickens and extends until the blood in the vessel is no longer visible with an ophthalmoscope. The retina frequently becomes oedematous and vision rapidly diminishes until, in old infections, complete blindness ensues. Frequently the field of vision is reduced before there is any loss of visual acuity. The authors have found that in a number of cases there is atrophy of the optic nerve and periarteritis before the appearance of choroiditis or lesions in the anterior chamber.

S.W.

(230b) The evaluation of the efficacy of anthelmintics is difficult because of the economic value of the animals which may be used (e.g. cats, dogs, sheep and cattle) and the impracticability of housing them in the laboratory in sufficiently large numbers to make the results of value. To overcome this, Deschiens suggests that chemicals should be tested in three steps: (i) *in vitro* trials of aqueous solutions or suspensions against *Rhabditis macrocerca* which is particularly resistant to anthelmintics in general; (ii) identical trials against *Haemonchus contortus* larvae and (iii) *in vivo* tests in mice infected with *Hymenolepis nana* or *Aspiculuris tetraptera* and in rabbits with *Passalurus ambiguus*. For each test, six animals should be used and a standard dose for a standard number of days, the last two depending on the chemical to be tested.

S.W.

231—Bulletin de l'Académie Vétérinaire de France.

- a. GUILHON, J., 1954.—“Propriétés anthelminthiques de l'ester amyphénolique de l'acide propionique.” 27 (3), 113–115.

(231a) The efficiency of the amyphenolic ester of propionic acid as an anthelmintic for pigeons carrying *Ascaridia columbae* and *Capillaria columbae*, for dogs harbouring *Toxocara canis*, *Ancylostoma caninum*, *Trichuris vulpis*, and for a sheep with strongyloid infection, was found to be poor. But egg production of the parasite was usually considerably reduced. Only when pigeons were dosed with over 3.5 gm. per kg. body-weight were adverse effects observed (vomiting and mucous diarrhoea).

M.MCK.

232—Bulletin of the British Ornithologists' Club.

- a. MANSON-BAHR, P., 1954.—“The life history of avian filaria parasites.” 74 (7), 75–77.

223—Bulletin of the National Society of India for Malaria and other Mosquito-Borne Diseases.

- a. KRISHNASWAMI, A. K. & RAGHAVAN, N. G. S., 1954.—“ Vectors of filarial infections in India and the Far East.” 2 (2), 57-70.

(223a) The bionomics and control of the vectors of filarial infections of man and animals in India and the Far East are briefly summarized. Natural infection rates and the experimental infection rates of *Wuchereria bancrofti* and *W. malayi* in each vector species are tabulated.

R.T.L.

224—Bulletin de la Société de Pathologie Exotique.

- a. LITALIEN, F. & DESCHIENS, R., 1954.—“ Comportement de mollusques vecteurs des bilharzioses en présence de nitrates et de nitrites alcalins.” 47 (4), 525-531.
 b. LALOUEL, J., 1954.—“ Bilharziose intestinale à *Schistosoma intercalatum* à Libreville.” 47 (4), 531-534.
 c. ANDRÉ, L. M., LAMY, L. & AGBOTON, D., 1954.—“ Alimentation supplémentaire par le lait écrémé. Ankylostomose et gains pondéraux chez l'enfant africain.” 47 (4), 535-539.
 d. FLOCH, H., 1954.—“ Lymphangite endémique des pays chauds, éléphantiasis, filariose et leishmaniose forestière américaine.” 47 (4), 539-543. [Discussion p. 544.]

(224a) Litalien & Deschiens have investigated the tolerance of *Bulinus contortus* and *Planorbis glabratus* to sodium and potassium nitrates and nitrites. Nitrates were better tolerated than nitrites and aeration of the aquarium tank increased tolerance to both. *B. contortus* was more resistant than *P. glabratus*. At a concentration of 1 gm. in 1,000 c.c. nitrates killed *P. glabratus* in four to five days and *B. contortus* in five to six days; at the same concentration, nitrites killed *P. glabratus* in one to two days and *B. contortus* in two to three days.

S.W.

(224b) Lalouel reports on the focus of *Schistosoma intercalatum* infection in Libreville which was first discovered by Clapier in 1922. There appears to have been a gradual increase in the number of cases since 1951, 30 infected persons being found in 1953 although the focus itself appears to be smaller and is restricted almost entirely to one native part of the town. The infection is predominantly in children and mostly in boys. The intermediate host has not yet been discovered there. Clinically the disease does not appear to be serious.

S.W.

(224c) The authors found that 41 out of 45 children who were successfully treated for ancylostomiasis gained weight whether or no their diet was supplemented with skimmed milk. When the hookworms were not eliminated only five out of 47 gained any weight whether or no their diet was supplemented. They have the impression that although spectacular weight gains followed disinfestation with or without the supplemented diet, the addition of skimmed milk is a useful adjuvant to treatment.

S.W.

225—Bulletin de la Société Vétérinaire Hellénique.

- a. MATTHÉAKIS, E. & MANIAS, T., 1954.—[Un cas d'onchocercose du tendon chez un cheval.] Ser. B, No. 13, pp. 562-564. [In Greek: French summary p. 564.]
 b. MENASSÉ, J., 1954.—[Contribution à l'étude de la lutte contre les sangsues des animaux domestiques.] Ser. B, No. 13, pp. 565-571. [In Greek: French summary p. 571.]

(225a) The authors record the first case of *Onchocerca* infection in Greece. This occurred in a horse. The presence of abscesses on the parasitic lesions facilitated diagnosis.

S.W.

(225b) Menassé has found an intravenous injection of 5 c.c. of a 1:1,000 solution of adrenaline followed by two or three subcutaneous injections at three-hourly intervals to be very effective against the asphyxia caused by leeches in the pharynx and larynx of domestic animals, especially bovines and buffaloes.

S.W.

226—Bulletin. Virginia Polytechnic Institute Agricultural Extension Service.

- a. FENNE, S. B., 1954.—“ Nematode control in tobacco.” No. 215, 12 pp.

237—Cahiers de Médecine Vétérinaire.

- a. EUZÉBY, J., 1954.—“Parasitisme et infection.” 23 (2), 33–63.

238—California Citrograph.

- a. BAINES, R. C., 1954.—“Steps forward in citrus nematode research.” 39 (8), 299–300.

(238a) In this general article Baines describes the effects on yield of infestation by the citrus nematode [*Tylenchulus semi-penetrans*] and he indicates suitable rates of soil injection of some nematocides which have been found effective in control. New chemicals are being tested and experiments are being carried out to find out the effectiveness of soil fumigants in ridding living trees of nematodes.

M.T.F.

239—Canadian Journal of Botany.

- a. MOUNTAIN, W. B., 1954.—“Studies of nematodes in relation to brown root rot of tobacco in Ontario.” 32 (6), 737–759.

(239a) Mountain describes his detailed investigations into the aetiology of brown root rot of tobacco in southern Ontario, paying particular attention to the nematodes associated with it. A study of the nematodes has shown that *Pratylenchus* spp. make up 38% of the population and the saprophytic *Eucephalobus* sp. 46%. In aseptic cultures of the roots of corn and tobacco, *Pratylenchus minyus* has been observed feeding on the roots and entering them, and the subsequent effects on the roots have been studied. It is shown that *Pratylenchus* is the primary agent in causing the disease. Tobacco was grown in fumigated and non-fumigated soil from fields having seven different previous crops and the net increase in weight of the tobacco and the numbers of *Pratylenchus* found in the soil after the growing period have shown that poor growth and an increase in nematodes followed crops of corn, red clover and rye. The tobacco was less stunted after red clover than after corn in spite of the presence of large numbers of *Pratylenchus*, and this is attributed to the fact that the species of nematode was different. Temperature studies showed that below 60°F. to 70°F. the brown root rot disease is not produced, while at 100°F. it is severe. At this temperature resistance to the disease shown by the variety Green Briar was broken down. Observations indicate that *P. minyus* is not entirely at home on tobacco, e.g. if this plant is grown for several years in a heavily infested field the nematode population will nearly disappear within three years.

M.T.F.

240—Canadian Journal of Comparative Medicine and Veterinary Science.

- a. CHOQUETTE, L. P. E., 1954.—“Vermineous bronchitis in cattle.” 18 (10), 347–356. [French summary pp. 355–356.]
b. NIELSEN, L. B., 1954.—“Canine filariasis in Canada. Report of a case.” 18 (10), 370–372.

(240a) Choquette reviews the present information on the life-history, disease, methods of diagnosis, epidemiology and control of *Dictyocaulus viviparus*. The author cites observations on the survival or non-survival of the larval stage of the parasite under natural and experimental conditions, describes the clinical picture and stresses the need for good management of animals in the prevention and control of the disease until a suitable medicinal treatment is found.

D.L.H.R.

(240b) Nielsen reports the finding of microfilariae in blood from a three-year-old female American foxhound, born in Canada, and two male foxhounds imported from Virginia. All three dogs were treated with caricide for 21 days. Blood samples from the female after nine days' treatment were negative and were still negative two months later. Blood from the males, however, remained positive. One of the males was treated intravenously with foudadin. No adverse reaction was noted until the final day of treatment when the dog vomited and exhibited slight ataxia. Samples of blood revealed only small numbers of microfilariae. Counts taken at intervals following treatment showed a noticeable increase in the number of microfilariae in the peripheral blood obtained during the administration of foudadin compared with the numbers seen before and after the treatment. Measurements were made on representative microfilariae; the larvae averaged 264.35 μ in length by 4.15 μ in diameter.

D.L.H.R.

241—Canadian Journal of Zoology.

- a. MYERS, B. J., 1954.—“Helminth parasites of reptiles, birds, and mammals in Egypt. I. *Streptopharagus kuntzi* sp. nov., from rodents, with a review of the genus.” 32 (5), 366–374.

(241a) A new species of nematode, *Streptopharagus kuntzi* n.sp., is described from the stomach and large intestine of *Rattus* sp., *Gerbillus* sp., *Acomys cahirinus* and *Meriones libycus* in Egypt. The distinguishing feature, given in a key to species of *Streptopharagus*, is the presence of a single sessile papilla near the tip of the tail. Myers reviews the genus and gives the geographical distribution of the species found in primates. M.MCK.

242—Canadian Medical Association Journal.

- a. WOLFGANG, R. W., 1954.—“Indian and Eskimo diphyllbothriasis.” 70 (5), 536–539.

(242a) Examination of the faeces of Indian and Eskimo patients, at five hospitals in Canada, for Diphyllbothrium eggs gave positive results in 10 out of 105 at Moose Factory Indian Hospital, Moosonee, Ontario, 27 out of about 600 at the Provincial Indian Sanatorium, Brandon, Manitoba, eight out of 93 at the Sioux Lookout Indian Hospital, Sioux Lookout, Ontario and three out of 108 at the Quebec Immigration Hospital, Quebec. Although equal numbers of each sex were examined, over two-thirds of the positive patients were males. A distribution map shows that in Canada there are endemic foci in all except the maritime provinces. R.T.L.

243—Ceylon Journal of Medical Science.

- a. COORAY, G. H., YOGANATHAN, M. & DISSANAIKE, A. S., 1954.—“*Enterobius vermicularis* in a suppurating cyst of the female breast.” 8 (4), 199–201.

(243a) Cooray, Yoganathan & Dissanaïke report on the presence of an adult female *Enterobius vermicularis* in a suppurating cyst of the right breast of a 42-year-old Ceylonese woman. The typical granulomatous reaction of the tissues to the presence of this worm was not observed as the infection was probably of very short duration. Histological study points to this woman having had an epidermoid cyst of the breast, to which her attention was directed by the recent onset of suppuration. The nematode probably entered the sub-epidermal tissue through a puncture that was present in the skin and its subsequent passage in the tissues caused a traumatic haemorrhage. The worm was probably conveyed to this unusual site through accidental contamination of the skin, either by the patient's own infected fingers or from the peri-anal skin of an infected child whom she may have carried. H.C.

244—Ceylon Veterinary Journal.

- a. SENEVIRATNE, P. & PERUMAL PILLAI, C., 1954.—“*Stephanurus dentatus* (kidney worm) infections in swine in Ceylon.” 2 (2), 52–55.
b. SENEVIRATNE, P., 1954.—“*Syngamus mogaughei* sp. nov. in domestic cats in Ceylon.” 2 (2), 55–60.
c. PILLAI, P. B. K., 1954.—“Leech (*Dinobdella ferox* Blanchard) in nasal passages of dog.” 2 (2), 62–63.

(244a) Seneviratne & Perumal Pillai report that *Stephanurus dentatus* appears to be a common parasite of pigs in the Kandy District of Ceylon. Symptoms and post-mortem lesions in infested pigs are briefly discussed, and the authors report on the results of a transmission experiment and on chemotherapeutic trials carried out with antimosan and caricide. H.C.

(244b) Seneviratne describes *Syngamus mogaughei* n.sp. from the frontal and nasal sinuses and pharynx of domestic cats in Kandy, Ceylon. It differs from each of the other known species in one or two structural features, the female being characterized by a long tail, bent dorsad, and a brandy-glass shaped buccal capsule. *Syngamus auris* is recorded from the middle ear of domestic cats in Kandy. H.C.

(244c) Pillai records the removal of the leech *Dinobdella ferox* from the nasal passages of three dogs in Ceylon and recommends the use of chenopodium oil to secure the expulsion of the leech. A short account by Babbist of *D. ferox* and its habits is incorporated in the text.

M.MCK.

245—Circular. Wyoming Agricultural Experiment Station.

- a. HONESS, R. F. & RYFF, J. F., 1954.—“Liver fluke in Wyoming.” No. 55, 8 pp.

246—Comptes Rendus des Séances de l'Académie des Sciences. Paris.

- a. ARVY, L. & BUTTNER, A., 1954.—“Données sur le cycle évolutif de *Diplostomulum phoxini* (Faust, 1918). (Trematoda, Diplostomidae).” 239 (17), 1085–1087.
 b. CHABAUD, A. G. & BIGUET, J., 1954.—“Sur le mécanisme d'infestation des copépodes par les cercaires de trématodes hémiuroides. Variations suivant les espèces.” 239 (17), 1087–1089.

(246a) Arvy & Buttner have completed experimentally the life-history of *Diplostomulum phoxini*, although the natural definitive host has not yet been found. The filiform sporocysts occurred in *Limnaea auricularia*; the furcocercariae developed in the sporocysts and when liberated penetrated *Phoxinus laevis* rapidly. The cercariae migrated to the brain and tiny active worms could be found there. The tail diminished and the cuticle became much thicker until about the 28th day when the worms were infective to the definitive host. Infected minnows were fed to domestic ducklings (aged two to eight weeks) and five days later many adult worms were present in the gut and large numbers of eggs in the faeces. The eggs did not develop.

S.W.

(246b) Chabaud & Biguet discuss the complex mechanisms for penetration into the host which are found in the cystophorous cercariae. They describe and illustrate the adaptation in a cercaria from *Hydrobia stagnalis*. In the tail there is a proximal dilatation which is hollowed out, forming a caudal chamber, and contains the body of the cercaria and a special “ejector tube”. This ejector tube is evaginated in the mouth of the second intermediary, *Poppella guernei*, and perforates the gut wall; the cercaria passes down the lumen of the tube, freeing itself of its appendages, and into the body-cavity. The morphology of the metacercaria corresponds with that of the adult *Bunocotyle cingulata*.

S.W.

247—Concours Médical.

- a. BERTRAND, J., 1954.—“Traitement de l'oxyurose.” 76 (13), 1281–1282.

248—Documenta de Medicina Geographica et Tropica. Amsterdam.

- a. SALOMÉ, B. Z., 1954.—“Schistosome dermatitis in the Netherlands.” 6 (1), 30–34.
 b. HARTZ, P. H., 1954.—“Strongyloidiasis with internal autoinfection in children.” 6 (1), 61–68. [Spanish summary p. 68.]

(248a) Four partially identifiable schistosome cercariae are reported from Holland: one resembling *Cercaria gyrauli* from *Planorbis planorbis*, one from *Limnaea palustris*, one from *L. stagnalis* similar to *C. neocellata* and *C. szidati* Neuhaus, 1952, and one in *Planorbis vortex*, the last three belonging to, or resembling the *ocellata* group. Salomé infected humans with some of these cercariae and made one histological examination. He describes the skin reactions which lasted from 12 hours to six weeks. His enquiries among doctors and biologists revealed known cases only in the north-western part of the province of Overijssel, but schistosome dermatitis occurs frequently in rush-cutters around Genemuiden and is probably more widely distributed.

M.MCK.

(248b) Autopsy of two children in Venezuela revealed, on histological examination, autoinfection by *Strongyloides stercoralis*. Larvae had invaded the liver, colon, jejunum, and in one case the mesocolon. Eggs and early larvae found in one jejunum occupied "incubation chambers" and not, as Brumpt contends, the stroma or lumina of the crypts. Hartz describes in detail the condition of the organs concerned and concludes that autoinfection is much more common than is supposed. M.MCK.

249—Elliniki Iatriki. Salonica.

- a. SPHANGOS, J., 1954.—[On a second case of human distomiasis in Greece.] 23 (1), [Reprint 5 pp.] [In Greek: English summary p. 5.]

250—Experimental Parasitology. New York.

- a. MALDONADO, J. F., ACOSTA-MATIENZO, J. & VÉLEZ-HERRERA, F., 1954.—"Comparative value of fecal examination procedures in the diagnosis of helminth infections." 3 (5), 403-416.
b. HANSEN, M. F., OLSON, L. J. & ACKERT, J. E., 1954.—"Improved techniques for culturing and administering ascarid eggs to experimental chicks." 3 (5), 464-473.

(250a) Maldonado *et al.* describe and compare various techniques for collecting helminth eggs from stools. They conclude that: (i) sodium sulphate-triton-ether and formalin-triton-ether techniques are the best for collecting *Schistosoma mansoni* eggs and are recommended for survey and field work; (ii) sodium sulphate-triton-ether is satisfactory for *Trichuris* but not for hookworm and *Ascaris*; (iii) hydrochloric acid-triton-ether is good for *Trichuris* but poor for *Ascaris*; (iv) neither the simplified-sedimentation-glycerinated-water nor HCl-sodium sulphate-triton-ether techniques are outstanding in any way; (v) the direct saline smear is the best method of detecting strongyloidiasis and perhaps *Ascaris* (its efficiency as a preliminary to further diagnosis is confirmed); and (vi) formalin-triton-ether is the nearest to an all-round technique, but it is least effective with strongyle eggs. M.MCK.

(250b) Hansen *et al.* have devised a method for minimizing the variation, caused by the settlement of *Ascaridia ova* in stock suspensions, in the number of eggs per dose administered to chicks. Egg counts were made in suspensions of ova in 1.25 M. cane sugar solution (of which the density is equal to that of the ova) and in water. Settlement gradually increased egg concentration in the water as sampling progressed, in spite of agitation. In infection experiments this was reflected by greater worm burdens in chicks receiving the later doses. No such increases were observed with the sugar medium. It is concluded that if variation is to be minimized sugar suspension should be used or else only half the volume of the water suspension. M.MCK.

251—Folia Medica. Naples.

- a. GIROMINI, M. & GRANATI, A., 1954.—"L'infestazione da anchilostoma duodenale fra i lavoratori agricoli di varie provincie d'Italia." 37 (1), 31-57. [French summary p. 57.]
b. GIROMINI, M. & GRANATI, A., 1954.—"La sindrome anemica nei lavoratori agricoli affetti da anchilostomiasi." 37 (2), 137-154. [French summary p. 151.]

(251a) The faeces of 19,527 agricultural workers selected at random in 14 Italian provinces were examined for evidence of hookworm infection. The results are variously analysed and tabulated. No cases of infection were found in Brescia, Verona or Bologna. The incidence in other provinces was: Reggio Calabria 43.45%, Catanzaro 17.63%, Cosenza 13.69%, Teramo 31.25%, Salerno 15.10%, Modena 8.35%, Chieti 3.26%, Genoa 1.61%, Massa 1.36%, Pavia 0.30% and Lecce 0.12%. An epidemiological survey in the province of Catanzaro revealed 689 suspected cases of ancylostomiasis among 1,359 agricultural workers. R.T.L.

252—Gazette Médicale de France.

- a. ROYER, P., HUERTAS, G. & MEDEVANT, A., 1954.—"L'ascaridiose de l'enfant. Son diagnostic radiologique." 61 (2), 119-120, 122-124, 127-128.

253—Gesunde Pflanzen. Frankfurt.

- a. TAUBITZ, 1954.—“Larvacide-Verfahren und Nematodenbekämpfung.” 6 (6), 134-137.

(253a) Taubitz has carried out pot experiments to determine the best time to use chloropicrin for the control of root-knot nematode in glass-houses. His results indicate that, after the removal of an affected crop, sufficient time should elapse for the roots remaining in the soil to decay and for the larvae in them to hatch before the nematicide is applied. M.T.F.

254—Giornale di Batteriologia e Immunologia.

- a. RUCCI, E., 1954.—“Conservazione ultradecennale di uova di elminti.” 47 (1/2), 45-47. [English, French & German summaries p. 47.]

(254a) In a sample of faeces preserved thirty-six years ago by the addition of glycerin, eggs of *Diphyllbothrium* were still in an excellently preserved state. R.T.L.

255—Hassadeh.

- a. MINZ, G. & PALTÍ, J., 1954.—[Control of nematodes on vegetables by soil fumigation.] 34 (6), 437-440. [In Hebrew.]
 b. MINZ, G., 1954.—[List of additional hosts of the root knot nematode, *Meloidogyne* sp., recorded from 1.10.52 to 31.12.53.] 34 (7), 511. [In Hebrew.]

(255a) Minz & Palti injected D-D mixture at 55 litres and at 27.5 litres per 1,000 sq.m., and ethylene dibromide 20% v/v at 33 litres and at 16.5 litres per 1,000 sq.m. into a light, irrigated soil, infested with root-knot nematodes. Cucumbers and tomatoes were sown 14 days later. The higher dose of D-D gave the best results and doubled the yield of cucumbers. In a second experiment EDB 20% v/v at 20 litres per 1,000 sq.m. was applied with a motor injector. Two applications at 10 days interval gave excellent control and doubled the yield of tomatoes sown 10-14 days later. A single application was also very effective and increased the yield by 75%. M.T.F.

(255b) Minz gives a list of nine hosts of *Meloidogyne* sp. of which the following four are new records for this nematode: *Dichondra serpens* (kidney weed), *Hirschfeldia incana* [= *Brassica adpressa* Boiss.], *Lavandula officinalis* [= *L. vera* DC] and *Populus alba*. M.T.F.

256—Hemera Zoa. Buitenzorg.

- a. KRANEVELD, F. C. & DJAENOEDIN, R., 1954.—“Infectie met *Dirofilaria immitis* bij de hond.” 61 (1/4), 41-44.

257—Hispalis Médica.

- a. DORRONSORO, A., 1954.—“A propósito de unos casos de quistes hidatídicos de pulmón.” 11 (115), 1-8.

258—Horticultura. Copenhagen.

- a. SHEPHERD, A. M., 1954.—“Rovsvampe.” 8 (3), 37-43. [English summary pp. 42-43.]
 b. LINDHARDT, K., 1954.—“Nye åleangreb, vi kan vente at komme ud for.” 8 (4), 56-58.

(258a) Shepherd gives a general account of nematode-destroying fungi with special reference to the work of Drechsler. The paper is illustrated with line drawings and photomicrographs. A.E.F.

(258b) Lindhart briefly describes certain eelworm infections in plants which are still uncommon in Denmark but which may well be encountered there in the future. Among the infections mentioned are: *Ditylenchus dipsaci* on beans, rye, oats, carrots and rhubarb; *Aphelenchoides ritzema-bosi* on black currants; *Heterodera göttingiana* on various food crops; *H. carotae* on carrots; and *Pratylenchus* on various crops. Growers who suspect any of these infections on these plants are asked to report to the Plant Pathological Institute at Lyngby. A.E.F.

259—Hospital. Rio de Janeiro.

- a. DEANE, L. M., 1954.—“Dedetização domiciliária e transmissão da filariose bancroftiana em Belém, Pará.” 45 (2), 187-206. [English summary pp. 204-206.]
- b. BOGLIOLO, L., 1954.—“Sobre o quadro anatômico do fígado na forma hêpato-esplênica da esquistossomose mansônica.” 45 (3), 283-306. [English summary pp. 304-305.]

(259a) Deane has studied over a period of one year the effect of spraying houses with D.D.T. on the transmission of bancroftian filariasis. In a highly endemic district of Belém, Pará, 19 houses in a zone submitted to antimalarial spraying were selected at random. Thirteen were treated twice and six were treated three times. 39,761 *Culex fatigans* females were collected and 11,900 were examined for filarial larvae. The infection rates before spraying were 8.2% with larvae in any stage of development and 0.4% with infective larvae; after spraying twice the rates were 2.8% and 0.1% respectively and after three sprays 2.8% contained larvae in any stage but none contained infective larvae. From 20 houses in a neighbouring untreated zone 9.7% of the *Culex fatigans* were infected with larvae in any stage of development and 0.5% with infective larvae.

R.T.L.

(259b) Of 17 Brazilian cases of hepato-splenic schistosomiasis mansoni, 14 had the macroscopical characteristics of Symmer's “clay-pipe-stem cirrhosis”. There was a chronic, granulomatous, fibrotic “peri-pylephlebitis” involving the connective tissue surrounding the larger portal branches but the inflammation did not invade the lobules. There was practically no epithelial regenerative hyperplastic reaction. Two of the remaining three cases showed Hashem's “diffuse bilharzial cirrhosis” in which the fibrotic inflammatory process extended to the lobules to form true interlobular and perilobular septa, and in one case the inflammation was intralobular and there was complete disorganization of the lobular architecture limited to a part of the organ and similar to that of “flint liver”. In none of the cases was the circulatory disturbance due to portal thrombosis and none could be mistaken for Morgagni-Laënnec's cirrhosis.

R.T.L.

260—Indian Journal of Medical Research.

- a. VARMA, A. K., 1954.—“Human and swine *Gastrodiscoides*.” 42 (3), 475-479.

(260a) Varma records the presence of *Gastrodiscoides hominis* in pigs at Bihar, India for the first time. He names the swine form *G. hominis suis* n.var. They are 4.5 mm. to 6 mm. long, i.e. about half the size of the human variety, and the testes are more distinctly lobed, unequal in size and obliquely tandem dorso-ventrally.

M.MCK.

261—Indian Veterinary Journal.

- a. ANANTARAMAN, M., 1954.—“On the scheme of development in the genus *Mesocestoides* of tapeworms.” 31 (2), 98-101.
- b. RAM, T. & CHAND, K., 1954.—“Trial of phenothiazine on donkeys at the Government Livestock Farm, Hissar.” 31 (2), 107-110.
- c. EMADUDDIN, M., 1954.—“*Setaria cervi* in the eye of a goat.” 31 (2), 111-112.

(261a) Although Tetrathyridium is generally recognized as the second larval stage of *Mesocestoides* its development from the egg has received little study. Anantaraman draws attention to Soldatova's experiment with oribatid mites and gives a theoretical reconstruction of the life-cycle which might be confirmed in Madras by experimental observations on the mites *Schelorbates* and *Galumna*.

R.T.L.

(261b) The results of faecal examination of 22 donkey foals before and after treatment with 15 gm. of phenothiazine are tabulated. There were light infections with strongyles, ascaris and strongyloides. The drug showed an efficiency of 71.1% to 100% against the strongyles but none against the ascaris and strongyloides infections. There was no difference in effect when the drug was administered in a single dose or in three daily doses of 5 gm. or in 15 daily doses of 1 gm. given on consecutive days. Evidence of infection began to reappear three months later and had almost reached pre-treatment level after six months.

R.T.L.

(261c) A female *Setaria cervi* 32.7 mm. long was removed from the aqueous humour of a goat at the Veterinary College Hospital, Hyderabad-Dn. This is believed to be the first record of the occurrence of this species in the goat. R.T.L.

262—Industrial Medicine and Surgery.

- a. GOLDBLOOM, A. A. & BOYD, L. J., 1954.—“Tetrachlorethylene fatality. Case report of a patient with infectious (virus) hepatitis and hookworm infestation.” 23 (3), 116-119.

263—Japanese Journal of Medical Science and Biology.

- a. YASURAOKA, K., 1954.—“Ecology of the miracidium. II. On the behavior to light of the miracidium of *Fasciola hepatica*.” 7 (2), 181-192.
- b. YANAGISAWA, T. & ISHII, K., 1954.—“On the granules in cytoplasm in relation to the formation of ascaris egg-shell.” 7 (2), 215-229.

(263a) Continuing the work on the behaviour of miracidia of *Fasciola hepatica*, Yasuraoka has studied their reactions to light. At intensities up to 100 lux the miracidia show positive phototaxis; greater intensities have no effect; sudden changes in intensity reverse the phototaxis. They are most strongly positively phototactic to green light and least strongly to red. The speed of the reaction increases with the temperature between 14°C. and 32°C. Dilute solutions of the lower alcohols had very little effect on the phototaxis but the higher alcohols had a paralysing effect. The techniques and apparatus used in the experiments are described in detail. S.W.

264—Journal of the American Medical Association.

- a. STONEHILL, R. B., CLEVE, E. A. & WEBB, W. M., 1954.—“Schistosomiasis japonica diagnosed by needle biopsy of the liver. Report of a case.” 155 (6), 567-568.
- b. WOLFORD, J. L. & RUMBALL, J. M., 1954.—“Schistosomiasis japonica untreated ten years after exposure. Report of a case.” 155 (12), 1045-1046.
- c. HELVIG, R. J. & WEAVER, L., 1954.—“Control of trichinosis by sanitary garbage disposal.” 155 (16), 1388-1389.
- d. MOORE, A. D., 1954.—“Future of the sanitary landfill.” 155 (16), 1390-1391.
- e. BUNDESEN, H. N., 1954.—“Control of trichinosis as a public health measure.” 155 (16), 1392-1393.
- f. WRIGHT, W. H., 1954.—“Control of trichinosis by refrigeration of pork.” 155 (16), 1394-1395.
- g. ANON., 1954.—“Recommendations of National Conference on Trichinosis.” 155 (16), 1395-1397.

(264d) As a result of the spread of vesicular exanthema in pigs in the U.S.A. since 1952 there has been a spectacular increase in the adoption of acts by state legislatures by which feeding raw garbage to pigs is forbidden. Indirectly this may have done more than anything else to help to bring trichinosis under control, but Moore fears that if a method of immunizing pigs against the virus is found the laws forbidding the feeding of raw garbage may be repealed in many states. R.T.L.

(264f) Although of undoubted value for the destruction of *Trichinella* larvae in pork and pork products, quick-freeze methods have not been adequately formulated. Additional technical data are required before the general application of this method can be recommended. The quick-freezing capacity of the meat packing plants in the U.S.A. is at present insufficient to deal with all the pork produced. Storage of pork in food lockers and home freezers, although unsupervised, has probably made a contribution to the control of trichinosis. R.T.L.

(264g) The recommendations adopted by the 1952 National Conference on Trichinosis are reproduced and the amendments of the 1954 Conference held at Chicago are incorporated. R.T.L.

265—Journal of the American Veterinary Medical Association.

- a. SMITH, D. E., 1954.—“Two fatalities due to whipworms in the dog.” 125 (931), 314-315.
- b. BINKLEY, K. L., 1954.—“Treatment of ascariasis in zoo animals with 1-diethylcarbamyl-4-methylpiperazine hydrochloride.” 125 (932), 408-409.
- c. RYFF, J. F., HONESS, R. F. & PIERSON, R. E., 1954.—“*Nematodirus* infection in calves.” 125 (932), 409-410.
- d. MAGATH, T. B., 1954.—“The importance of sylvatic hydatid disease.” 125 (932), 411-414.

(265b) The use of caricide, at the recommended dose of 25 mg. per lb. body-weight, has been instituted as a routine for the treatment of ascariasis particularly in newly acquired animals at the Woodland Park Zoo, Seattle, Washington. No preliminary dietary preparation or post-treatment evacuants are necessary. Three case reports are cited. R.T.L.

(265c) In the third year after a herd of cattle (in which there had been no previous trouble from parasitism) had been moved to a ranch under intensive irrigation the calves became unthrifty; in the fourth year 12 out of 150 calves were lost and many of those remaining were poor and scouring. At autopsy *Nematodirus helvetianus* were found to the number of at least 6,000 in one calf and 13,000 in a second calf. Although treated several times with phenothiazine and fed with increased hay and alfalfa pellets 27 of the 150 calves died during the winter following weaning, 24 of these deaths being attributed to parasitism. A system of pasture rotation was then adopted. The cattle during the first five months grazing season were grazed on five areas for periods of 30, 30, 21, 42 and 30 days respectively. No further trouble was experienced. R.T.L.

(265d) There have been numerous surveys of parasites of dogs in the U.S.A. but in only nine instances has *Echinococcus granulosus* been reported hitherto. Yet there are records of about 40 cases of an autochthonous hydatidosis in man and pigs have frequently been found to be infected. Riley's findings of adult *E. granulosus* in timber wolves in Minnesota and of hydatids in moose and deer in the same region and the later discoveries in Canada and Alaska of adult *Echinococcus* in wild canines, and hydatids in the elk, mule deer, black-tailed deer and reindeer led to the conception of a variety of life-cycles. One example is that of wolf-moose-wolf, with caribou and deer occasionally substituting moose, and the coyote occasionally acting as a substitute for the wolf. A second life-cycle is that involving the fox and occasionally the dog or wolf, on the one hand, and pigs with occasionally sheep and cattle on the other hand. A third cycle is that which is typically maintained by Arctic and other foxes with voles as intermediate hosts. This cycle probably is concerned with the production of the alveolar type of hydatid. Man becomes involved by eating grasses contaminated with the eggs. Sylvatic echinococcosis can only be effectively controlled by educating the new generation in basic sanitation. R.T.L.

266—Journal of the Chemical Society. London.

- a. MACKIE, A. & CUTLER, A. A., 1954.—“Preparation of phenothiazine derivatives as possible anthelmintics.” Year 1954, pp. 2577-2579.

(266a) The experimental preparation of derivatives of phenothiazine is described, including β -10-phenothiazinylpropionic acid and its sodium salt. 1:3,000 of the acid was lethal and 1:1,000 of the salt was paralyzant to liver-flukes. R.T.L.

267—Journal of the Christian Medical Association of India.

- a. THOMPSON, E. J., 1954.—“Atabrine—an effective anthelmintic.” 29 (2), 65-68.

(267a) Recent papers in American literature show an awakening interest in atebirin for the removal of tapeworms, especially *Hymenolepis nana*, and of *Enterobius vermicularis*. Whereas tapeworms killed by anthelmintics disintegrate and release large amounts of foreign protein in the intestine, atebirin expels the parasites alive. R.T.L.

268—Journal of Comparative Pathology and Therapeutics.

- a. GIBSON, T. E., 1954.—“Studies on trichostrongylosis. I. The pathogenesis of *Trichostrongylus axei* in sheep maintained on a low plane of nutrition.” 64 (2), 127–140.
- b. MICHEL, J. F. & ROSE, J. H., 1954.—“Some observations on the free living stages of the cattle lungworm in relation to their natural environment.” 64 (3), 195–205.
- c. SOULSBY, E. J. L., 1954.—“Skin hypersensitivity in cattle infested with *Fasciola hepatica*.” 64 (3), 267–274.

(268a) The effects of an infestation of *Trichostrongylus axei* on six eight-month-old lambs are recorded. In three cases, two of which had worm burdens over 51,000, the infestation proved fatal. The chief symptoms were severe loss of weight and oligocythaemia and just before death a tendency to neutrophilia. The oligocythaemia appears peculiar in that regenerative forms are absent, and it is caused entirely by a failure in the production of erythrocytes by the erythroblastic tissues. The other three lambs were less severely affected, probably due to inherent resistance, and at their post-mortem examination the changes in their weight and blood picture were insignificant. D.M.

(268b) Michel & Rose carried out a series of experiments on the survival of larvae of *Dictyocaulus viviparus* in faeces and on herbage under field conditions. From their observations they concluded that the length of survival of larvae varied with the time of year but that there was always an initial heavy mortality, at least 90% of the larvae dying within the first three weeks. The surviving larvae tended to remain in the faeces, not to migrate on to herbage. Drought, showery weather with bright intervals, and drying by sun and wind were all unfavourable to the larvae and the optimum conditions were of high humidity and not too low a temperature. If faeces were spread into a thin film on the herbage the initial survival was longer and it appears that to ensure that larvae get on to the herbage in significant numbers the faeces must be spread on it. S.W.

(268c) Soulsby skin-tested 212 cattle with *Fasciola hepatica* antigen approximately 24 hours before they were killed. On post-mortem evidence 164 were shown to be infected with *F. hepatica*; of these 148 developed a skin reaction of 6 mm. or more, twelve of 5 mm., and four (emaciated and diseased) of only from 1 mm. to 4 mm. Marked increase in the thickness of the skin was frequent. Of the 48 uninfected animals tested only seven showed a skin reaction of 6 mm. and there were no marked increases in the thickness of the skin. Local desensitization could be produced but attempts to produce a general desensitization by intra-dermal injections were unsuccessful. Hypersensitivity could be induced by the transfer of serum, obtained from the heart blood, from infected to uninfected animals. Infection with tuberculosis did not give rise to any false positives. S.W.

269—Journal of the Egyptian Medical Association.

- a. NOR EL DIN, G. & BAZ, I. I., 1954.—“Sputum examination in the diagnosis of bilharziasis of lungs.” 37 (1), 75–81.
- b. SIRRY, A., 1954.—“Radiological study of chronic appendicitis with special reference to bilharziasis of the appendix.” 37 (2/3), 221–246.
- c. HALAWANI, A., 1954.—“Control of schistosomiasis by molluscicides. Report on the molluscicides sodium pentachlorophenate and dinitro-*o*-cyclohexyl phenol (D.C.H.P.).” 37 (6), 581–612.
- d. KHALIL, H. A., 1954.—“Complications due to ascariasis. Literature and case report.” 37 (6), 706–719.
- e. KHALIL, H. A., 1954.—“A case record of bilharziasis of the lip.” 37 (6), 720–723.

(269a) [This is a slightly fuller account of a paper published in *Amer. J. trop. Med.*, 1954, 3, 326–328. For abstract see *Helm. Abs.*, 23, No. 4m.]

(269c) Halawani investigated the molluscicides sodium pentachlorophenate (Santobrite, Dowicide) and dinitro-*o*-cyclohexylphenol (DN-1, D.C.H.P.) against *Planorbis boissyi* and *Bulinus truncatus* in Egypt. The chemicals were sprayed on to canals in aqueous solution and were most effective at resulting concentrations of 5 and 10 p.p.m., eliminating snails for

two months. Copper sulphate similarly applied was inferior. The local distribution of healthy and parasitized snails is discussed and the author stresses the importance of studying this in large scale control. The molluscicides kill small fish and leeches but are harmless to aquatic plants. Tests on crops showed that D.C.H.P. tended to stimulate and Santobrite to retard germination.

M.MCK.

270—Journal of Infectious Diseases.

- a. URQUHART, G. M., MULLIGAN, W. & JENNINGS, F. W., 1954.—“Artificial immunity to *Fasciola hepatica* in rabbits. I. Some studies with protein antigens of *F. hepatica*.” 94 (2), 126-133.
- b. RAUSCH, R., 1954.—“Studies on the helminth fauna of Alaska. XX. The histogenesis of the alveolar larva of *Echinococcus* species.” 94 (2), 178-186.
- c. LARSH, Jr., J. E. & RACE, G. J., 1954.—“A histopathologic study of the anterior small intestine of immunized and nonimmunized mice infected with *Trichinella spiralis*.” 94 (3), 262-272.

(270a) Urquhart, Mulligan & Jennings extracted protein from adult *Fasciola hepatica* with saline, made alum precipitated preparations for use as immunizing antigens, and subjected the saline extract to salt fractionation in order to obtain a more purified protein for use as a precipitating antigen in qualitative and quantitative tests. In rabbits immunized by three injections of protein before infection, the precipitin level to the test antigen was, in most cases, considerably greater 63 days after the injection than at the time of injection, and was comparable with that of the control rabbits 63 days after infection with 50 cercariae. No increase occurred in animals subjected to a course of six injections before infection, but the precipitin level at the time of infection was considerably greater than in the group having only three injections before infection. At autopsy 63 days after infection no marked differences in the numbers of worms recovered from control and immunized rabbits were observed but flukes from the immunized rabbits were invariably retarded in development and had an average total nitrogen content (0.41 mg.) lower than the controls (1.13 mg.). The livers of the immunized animals showed similar lesions to those of the control group.

D.L.H.R.

(270b) Rausch has studied the histogenesis of the larval stages of the species of *Echinococcus* which occurs in nature in the voles *Microtus oeconomus* and *Clethrionomys rutilus* on St. Lawrence Island and becomes adult in the arctic fox *Alopex lagopus* and in sledge dogs. In laboratory-reared *M. pennsylvanicus* obtained from the eastern U.S.A., infected with gravid segments obtained from foxes, the larvae attained alveolar form by means of a rapid proliferation of exogenous secondary vesicles. This constitutes the main difference between this form and the larva of *Echinococcus granulosus*. There were no morphological differences between the adults.

R.T.L.

(270c) [This is the full account of an author's abstract published in *J. Parasit.*, 1953, 39 (4, Sect. 2), Suppl. p. 40, and is illustrated by twelve photomicrographs. For abstract see *Helm. Abs.*, 22, No. 222dc.]

271—Journal of Mammalogy.

- a. PENNER, L. R., 1954.—“*Dirofilaria scapiceps* from snowshoe hare in Connecticut.” 35 (3), 458-459.
- b. PENNER, L. R., 1954.—“A note on *Macracanthorhynchus ingens* in a Connecticut raccoon.” 35 (3), 459.

(271a) Penner records the presence of *Dirofilaria scapiceps* in a *Lepus americanus* *phaeomotus* shot near Abington, Connecticut.

R.T.L.

(271b) Penner records the presence of a *Macracanthorhynchus ingens* in a raccoon caught in Connecticut.

R.T.L.

272—Journal de Médecine de Bordeaux et du Sud-Ouest.

- a. LEMOINE, J., 1954.—“La forme septicémique de la distomatose hépatique.” 131 (7), 674-677.

273—Journal of Neurosurgery. Springfield, Illinois.

- a. HOOPER, R. S., 1954.—“Cerebral paragonimiasis.” 11 (3), 318-323.

(273a) Hooper gives the case history of a Chinese seaman whose clinical picture in the Royal Melbourne Hospital suggested a frontal lobe abscess secondary to a frontal sinusitis. During operation a small loculated abscess cavity and a granulomatous mass were located in the frontal lobe. Purulent material removed from another fluctuant mass contained eggs of *Paragonimus westermanii*. Radiographs of the chest showed no abnormality. No eggs were found in the sputum.

R.T.L.

274—Journal of Parasitology.

- a. WAGNER, E. D., 1954.—“The life history of *Proteocephalus tumidocollis* Wagner, 1953, (Cestoda), in rainbow trout.” 40 (5, Sect. 1), 489-498.
 b. CRUSZ, H. & FERNAND, V. S. V., 1954.—“The trematode parasites of the dugong with descriptions of two new monostomes and histopathological changes in the host.” 40 (5, Sect. 1), 499-507.

(274a) *Cyclops vernalis*, *Eucyclops agilis*, *E. speratus* and *Tropocyclops prasinus* have been found naturally infected with the larval stages of *Proteocephalus tumidocollis* of the trout, *Salvelinus fontinalis fontinalis* and *Salmo gairdnerii*, in hatchery reservoirs in California. Development has also been followed experimentally in *S. gairdnerii*. The sucker formation was first seen on the 13th day; three to four days later the suckers were fully developed. A caudal appendage was found on the 15th day and was shed about four days later. Growth was best at 20°C. and was inhibited at 1°C. Plerocercoid larvae became infective to fish as early as nine days after the eggs were fed to Cyclops. No second intermediary was required to complete the life-cycle but the tapeworms were transferred when small infected fish were fed to large fish. Proglottis formation first appeared 33 days after ingestion of infected Cyclops. Eggs were present in the uterine pouches on the 62nd day. Some immunological factors were responsible for removing an initial infection when a second dose of infected Cyclops was administered 44 days after the initial dose.

R.T.L.

(274b) Crusz & Fernand describe two new pronoccephalid trematodes, *Lankatrema mannarensis* n.g., n.sp. and *Taprobanella bicaudata* n.g., n.sp. from the stomach of four male and female specimens of *Dugong dugong* caught in the Gulf of Mannar, Ceylonese waters. The species are assigned to two redefined subfamilies, Nudacotylinae and Pronoccephalinae, respectively. *L. mannarensis* was found in all four regions of the host's stomach, both free in the lumen and encapsulated in the mucosa, while *T. bicaudata* was free in the pyloric stomach and pyloric caeca only. Histological study of infested stomach wall suggests that a number of worms of the species *L. mannarensis* enter gastric glands at an early stage of development, enlarge them and die only when the cavities so formed are cut off from the gastric lumen. Dead worms then act as foreign bodies and provoke intense cellular reaction resulting in nodules containing necrotic debris, organisms and trematode eggs, surrounded by plasma cells, lymphocytes, mononuclears, giant cells and fibrotic tissue. The paramphistome, *Indosolenorchis hirudinaceus*, occurred in large numbers in the intestinal caecum of the same dugong. Further morphological study has revealed the presence in this species of three pairs of main longitudinal lymphatic ducts and not two pairs as previously described by Crusz in 1951 [for abstract see Helm. Abs., 20, No. 86a]. A list of trematode species hitherto recorded from the dugong is given in a table.

H.C.

274—Journal of Parasitology (cont.)

- c. CHU, G. W. T. C. & CUTRESS, C. E., 1954.—“*Austroilharzia variglandis* (Miller and Northup, 1926) Penner, 1953, (Trematoda: Schistosomatidae) in Hawaii with notes on its biology.” 40 (5, Sect. 1), 515–524.
- d. CHATTERJI, P. N., 1954.—“Two new cestodes of the genera *Idiogenes* Krabbe, 1868 and *Choanotaenia* Railliet, 1896.” 40 (5, Sect. 1), 535–539.
- e. RAUSCH, R., 1954.—“Studies on the helminth fauna of Alaska. XXI. Taxonomy, morphological variation, and ecology of *Diphylobothrium ursi* n.sp. provis. on Kodiak Island.” 40 (5, Sect. 1), 540–563.
- f. VOGEL, M. & READ, C. P., 1954.—“A description of *Parafimbriaria websteri* n.g., n.sp., a cestode from grebes, and notes on three species of *Hymenolepis*.” 40 (5, Sect. 1), 564–570.
- g. STUEBEN, E. B., 1954.—“Larval development of *Dirofilaria immitis* (Leidy) in fleas.” 40 (5, Sect. 1), 580–589.

(274c) The apharyngeal furcocercous cercaria reported by Chu from the marine snail *Littorina pinnata* in Hawaii is now identified as that of *Austroilharzia variglandis* which occurs naturally in the mesenteric veins of *Arenaria interpres interpres*. The modes of infection of the intermediate and definitive hosts are described and additional morphological details of the cercariae and adult are now given. Chickens, ducks, noddy terns and sooty terns were experimentally infected.

R.T.L.

(274d) Two new tapeworms are described from Uttar Pradesh province, India. *Idiogenes butasteri* n.sp. from the kite *Butaster tisa* is distinguished by the following characters: the suckers are armed with spines, a pseudo-scolex is present, the cirrus is large and protruding, the vas deferens is inconspicuous, the vesicula seminalis is small and uncoiled, the testes number only eight, the ovary is bilobed and the uterine openings are unilateral. In *Choanotaenia bhattacharai* n.sp. from *Querquedula querquedula*, the well developed rostellar hooks are small, number about fourteen and are in a single row; the testes number from 16 to 20, are post-ovarian and overlap one another; the cirrus is aspinose and simple; each egg capsule holds a single onchosphere; the genital pores are marginal, alternate regularly and are situated near the anterior corner of each proglottis.

R.T.L.

(274e) As plerocercoids from cysts on the serosa of the stomach of red salmon caught in streams tributary to Karluk Lake resulted, when fed to captive black bears, in cestodes morphologically identical with those commonly found in the Kodiak Island bears, it is concluded that these bears acquire their infection from eating red salmon. The adult worms show a wide range of variation and, while closely resembling some previously described species, cannot with certainty be identified morphologically with any of them. Nevertheless, in order to make available a name by which the cestode in the Kodiak Island bears may be designated, Rausch suggests *Diphylobothrium ursi* n.sp. provis. for the adult in *Ursus arctos middendorffi* and for the plerocercoid larva in *Oncorhynchus nerka*.

R.T.L.

(274f) Descriptions are given of *Hymenolepis furcigera* (Krabbe, 1869) and *H. podicipina* Szymanski, 1905 from *Colymbus nigricollis* in the Gulf of California and of *H. recurvirostrae* (Krabbe, 1869) from *Recurvirostra americana* at Newport Bay, California. *R. americana* is a new host for *H. recurvirostrae*. *H. podicipina* and *H. recurvirostrae* are recorded for North America for the first time. *H. podicipina*, which Joyeux & Baer had tentatively treated as a synonym of *H. furcigera*, is considered a valid species. *Parafimbriaria websteri* n.g., n.sp. from *Colymbus nigricollis* in California, differs from all known species of Fimbriariinae in the non-reticulate character of its ovary, in lacking a pseudo-scolex and in the reduction to four of the number of longitudinal excretory ducts.

R.T.L.

(274g) Stueben has now shown that when *Ctenocephalides felis* and *C. canis* were restricted to feeding on a dog infected with *Dirofilaria immitis*, 98% became infected. The microfilariae penetrate the midgut and can enter the abdominal haemocoel within one hour. The first and second-stage larvae develop in the abdominal haemocoel; the third-stage larvae are found in the haemocoel of the abdomen and thorax and most of the infective stage in the haemocoel

274—Journal of Parasitology (cont.)

- h. CHERNIN, E., 1954.—"Diethylcarbamazine (hetrazan[®]) in the treatment of strongyloidiasis." 40 (5, Sect. 1), 589–590.
- i. GOODCHILD, C. G., 1954.—"Survival of gorgoderine trematodes in experimentally altered environments." 40 (5, Sect. 1), 591–602.
- j. PAN, C. T., RITCHIE, L. S. & HUNTER, III, G. W., 1954.—"Reinfection and seasonal fluctuations of *Ascaris lumbricoides* among a group of children in an area where night soil is used." 40 (5, Sect. 1), 603–608.
- k. SPRENT, J. F. A., 1954.—"The life cycles of nematodes in the family Ascarididae Blanchard 1896." 40 (5, Sect. 1), 608–617.

of the thorax and the head. Fleas of both sexes are susceptible to infection and their reproductive capabilities are unaffected. There is no apparent increase in mortality. Stueben has demonstrated that infective larvae escape through the region of the mouth parts when the intracoelomic pressure increases and enter the skin puncture but that they cannot pierce the intact skin. Development to the infective stage was also traced both in males and females of *Xenopsylla cheopis*, *Pulex irritans*, *Echidnophaga gallinacea* and *Orchopeas wickhami*. R.T.L.

(274h) A survey of 750 workers at a jute mill in west Bengal showed that 8.1% were infected with *Strongyloides stercoralis*. Seven cases of varying severity were selected for treatment with 6 mg. of hetrazan per kg. body-weight, thrice daily for six consecutive days. Nine days after the completion of treatment only two out of the seven cases were negative although the number of larvae in the group as a whole was reduced. Five of the patients had toxic symptoms. R.T.L.

(274i) When adult *Gorgodera amplicava* from *Rana catesbeiana* and *Gorgoderina attenuata* from *R. pipiens* were transplanted intra- and interspecifically into these hosts and into *R. sylvatica*, they retained their normal appearance and behaviour for 21 days after auto-, homo- and hetero-transplantation from bladder to bladder. Starving flukes remained alive in 60% to 80% Ringer's solution for seven days and for thirteen days when nitrogen was continuously bubbled into the solution. But when transplanted intra- and interspecifically into the conjunctival sac, anterior eye chamber, dorsal lymph sac, vocal sac, lung and coelom they quickly succumbed. R.T.L.

(274j) The faeces of 282 children between 12 and 15 years old were examined monthly for 14 months in an area in Japan where night soil was used extensively in vegetable gardens. In March, two months after successful treatment with hexylresorcinol for the eradication of *Ascaris lumbricoides*, 5% of the children began to discharge *Ascaris* ova; this rose in April to 17%, in May to 38%, in July to 59% and in August to 64%. There was a fall in September to 45% but thereafter the increase was steady, until in January it reached 78%, which was the pre-treatment level of infection. The September fall suggests that the average life span of *A. lumbricoides* may be considerably less than one year. R.T.L.

(274k) Sprent summarizes evidence which has accumulated since 1866 when Leuckart suggested that certain ascarids had intermediate hosts and discusses its evolutionary significance. This group of worms may have originated as parasites of marine arthropods and radiated among marine animals through invertebrate and piscine marine intermediaries. Later the ova deposited in the faeces of littoral animals may have given rise to encysted larvae in the tissues of terrestrial, coprophagous animals and so have reached terrestrial carnivores. Extension to non-carnivorous hosts may have resulted from various modifications in the migratory behaviour of the larvae, e.g. the tracheal migration in *Ascaris lumbricoides*, the limited abdominal migration in *Toxascaris leonina* and the placental migration in *Toxocara canis* which avoids the necessity of intermediate hosts. R.T.L.

274—Journal of Parasitology (cont.)

1. SMITH, W. N. & CHITWOOD, M. B., 1954.—“*Anatrichosoma cynamolgi*, a new trichurid nematode from monkeys.” 40 (5, Sect. 2), 12.
- m. ANDERSON, R. C., 1954.—“The development of *Ornithofilaria fallisensis* Anderson, 1954 in *Simulium venustum* Say.” 40 (5, Sect. 2), 12.
- n. HERMAN, C. M. & WEHR, E. E., 1954.—“Fluctuations in intensity of *Amidostomum* infection in a wintering population of Canada geese.” 40 (5, Sect. 2), 12–13.
- o. TURNER, J. H. & KATES, K. C., 1954.—“The pathogenic effect on lambs of a bovine strain of the stomach hairworm, *Trichostrongylus axei*.” 40 (5, Sect. 2), 13.
- p. KERR, K. B., 1954.—“Age of chickens and the rate of maturation of *Ascaridia galli*.” 40 (5, Sect. 2), 13.
- q. NORMAN, L. & SADUN, E. H., 1954.—“Immunodiagnosis of *Trichinella spiralis* in hogs by the use of the flocculation test.” 40 (5, Sect. 2), 13.

(274l) *Anatrichosoma cynamolgi* n.g., n.sp., similar to *Trichosomoides* but with the male and female living separately, is reported from the nasal septa of *Cynomolgus philippinensis* and is assigned to Anatrichosominae n.subf. The female, 17.8 mm. to 19.33 mm. long, is sharply constricted on one side at the base of the stichocytes; the cuticle is inflated anteriorly and bears laterally two broad longitudinal bands of punctations; the uterus is packed with biopericulate embryonated eggs; vulval lips are prominent without appendage, and are located behind the lateral constriction. The male, 19.1 mm. to 20.7 mm. long, has typically trichurid genitalia and two subventral and at least two pairs of lateral caudal papillae; cephalic inflation, cirrus and spicules are absent; the oesophagus is about one-third to one-fourth of the body length. M.MCK.

(274m) White Peking ducks exposed at Algonquin Park, Ontario, when *Simulium venustum* were active, contracted natural infections of *Ornithofilaria fallisensis*. *S. venustum* were then fed experimentally on the infected ducks. The third-stage larvae appeared in the head of the fly in 9 to 15 days. When these larvae were injected subcutaneously into an uninfected duckling, microfilariae appeared in the blood 30 days later. M.MCK.

(274n) Autopsies and faecal egg counts revealed a high incidence of *Amidostomum* in *Branta canadensis* wintering in North Carolina. Although worm burdens were evidently stable, bi-weekly egg counts of captured geese varied more than a hundredfold and are therefore unreliable guides to intensities of infection. M.MCK.

(274o) Acute diarrhoea, severe gastritis and anorexia were produced in lambs by a bovine strain of *Trichostrongylus axei*. This strain proved to be as pathogenic as that reported by Gibson in England. Five to six weeks after administering 50,000 to 500,000 larvae to each of 6 lambs, 5 died or were killed *in extremis* and weighed from 13 lb. to 29 lb. less than uninfected controls. The number of worms recovered varied inversely with the doses given. M.MCK.

(274p) When chicks under three months old were infected with *Ascaridia galli*, the worms matured in 30 to 35 days (not 50 days as found by Ackert in 1951). This agrees with field reports from broiler chicken operations. But in chicks infected at three months or older, the worms matured in 50 days. M.MCK.

(274q) The bentonite flocculation test proved quite reliable in detecting heavy infections of *Trichinella spiralis* in pigs if the serum was obtained a few weeks after the ingestion of infected meat. The reaction failed when the infection was light or when the serum was obtained before the second week after the ingestion of the larvae. In those animals in which there was a heavier infection a positive reaction became negative several weeks later. The employment of the flocculation test at abattoirs for routine diagnosis when pigs are slaughtered is therefore of limited value. R.T.L.

274—Journal of Parasitology (cont.)

- r. OLSEN, L. J., SCOTT, J. A. & MACDONALD, E. M., 1954.—“Factors in racial immunity of the white rat to cotton rat filarial worms.” 40 (5, Sect. 2), 14.
- s. WESTBROOK, M. G. & SCOTT, J. A., 1954.—“A statistical analysis of the growth in length of the filarial worms in the cotton rat.” 40 (5, Sect. 2), 14.
- t. STOLL, N. R., 1954.—“Improved yields in axenic fluid cultures of *Neoaplectana glaseri* (Nematoda).” 40 (5, Sect. 2), 14.
- u. WEINSTEIN, P. P., 1954.—“The cultivation of the free-living stages of *Nippostrongylus muris* and *Necator americanus* in the absence of living bacteria.” 40 (5, Sect. 2), 14–15.
- v. WEINSTEIN, P. P. & HASKINS, W. T., 1954.—“Chemical evidence of an excretory function for the so-called excretory system of the filariform larva of *Nippostrongylus muris*.” 40 (5, Sect. 2), 15.
- w. LEVINE, N. D. & IVENS, V., 1954.—“Nematocidal screening tests of cadmium compounds against horse strongyle larvae.” 40 (5, Sect. 2), 15.
- x. MAYHEW, R. L., 1954.—“The rate of consumption of a 10 to 1 salt-phenothiazine mixture used in the control of parasites of cattle.” 40 (5, Sect. 2), 15–16.

(274r) After infection with *Litomosoides carinii*, white rats harboured a few stunted worms while infected cotton-rats harboured normally developed worms. When transferred 7 to 26 days after infection from cotton-rats to either cotton or white rats, the nematodes survived equally well. Evidently the white rat adversely affects the worms during their growth but afterwards supports them as well as does the cotton-rat. M.MCK

(274s) In a statistical analysis of the lengths and growth rates of 1,600 *Litomosoides carinii* of various ages from primary infections in cotton-rats the variation in length was partly related to the age and sex of the host. Only rats of the same age and sex should therefore be used in experiments involving this nematode. M.MCK

(274t) Twenty-five third-stage larvae of *Neoaplectana glaseri* were inoculated into a 10 ml. mixture of beef heart infusion broth and raw liver extract from rabbits in late pregnancy or early post partum. In three weeks the larvae yielded an average of over 10,000 worms, whereas parallel experiments using other raw liver extracts had produced only 2,500–5,000 worms [see Helm. Abs., 22, No. 110r]. Yields of about 10,000 were also obtained with 30 ml. of less potent extracts, by using 50 ml. Erlenmeyer flasks instead of 22 × 180 mm. tubes. M.MCK

(274u) Weinstein cultured *Nippostrongylus muris* and *Necator americanus* eggs to the filariform larval stage on normal and Selas-filtered chick embryo extract, on *Escherichia coli* on beef heart infusion broth and mixtures of these. The highest numbers of *Nippostrongylus muris* (88%) developed when formaldehyde-killed *E. coli* were added to Selas-filtered extract and the highest numbers of *Necator americanus* (98%) when the formaldehyde-killed *E. coli* were added to 50% untreated embryo extract. *N. americanus* on Selas-filtered extract alone gave no growth and *Nippostrongylus muris* on beef heart broth less than 1% growth. M.MCK

(274v) Filariform larvae of *Nippostrongylus muris* kept in dilute aqueous solutions of catechol and mono-, di-, and tri-hydroxy benzoid compounds capable of forming quinoid structures upon atmospheric or auto-oxidation, formed precipitates and globular masses at the excretory pore, suggesting the secretion of amines. Analyses of the distilled water in which these larvae were kept gave 1,2-dicarboxylic acids, ammonium salts, ethylene diamine, cadaverine, ethanolamine, methyl, butyl and propyl amines. M.MCK

(274w) Larval development was prevented when strongyle-infected horse faeces were mixed with cadmium compounds in the following concentrations: cadmium chloride 0.009%, bromide 0.034%, nitrate 0.031%, acetate 0.027%, oxide 0.032%, sulphate 0.208% and anthranilate 0.39%. Cadmium carbonate at 0.172% and sulphide at 0.145% were inactive. M.MCK

(274x) When cattle were offered free choice of (i) phenothiazine-salt mixture (1:10) (ii) phenothiazine-salt with 3% molasses, or (iii) salt alone, they consumed varying amounts regardless of season, and often ingested insufficient phenothiazine to control hookworms, nodular worms and large stomach worms. M.MCK

274—Journal of Parasitology (cont.)

- y. SHUMARD, R. F. & HERRICK, C. A., 1954.—“The effect of various minerals on the growth of *Haemonchus contortus* larvae.” 40 (5, Sect. 2), 16.
- z. PRICE, D. L., 1954.—“Filarial parasites in mammals.” 40 (5, Sect. 2), 16.
- ba. EHRENFORD, F. A., 1954.—“Diagnosis of *Physaloptera* in dogs by stool examination.” 40 (5, Sect. 2), 16.
- bb. DOUGLAS, J. R., 1954.—“Internal parasitism in monozygotic cattle twins.” 40 (5, Sect. 2), 17.
- bc. HANSEN, M. F. & TURNER, D. S., 1954.—“Importance of the *Ascaridia galli* egg shell to the infectivity of its larvae.” 40 (5, Sect. 2), 17.
- bd. KNAPP, S. E. & HANSEN, M. F., 1954.—“Observations on the anthelmintic action of carbon disulphide on the fowl ascarid, *Ascaridia galli* (Schränk).” 40 (5, Sect. 2), 17–18.
- be. CAMPBELL, C. H., 1954.—“The antigenic role of the excretions and secretions of *Trichinella spiralis* in the production of immunity in mice.” 40 (5, Sect. 2), 18.

(274y) When faecal material from lambs receiving salt with iodine, cobalt, manganese or trace minerals (cobalt, manganese, iron and copper) was used as a culture medium for the ova of *Haemonchus contortus* the larvae obtained from lambs on salt with cobalt or trace minerals were significantly longer than from those which were fed with manganese or iodized salt supplement. The length of the larvae also varied significantly with the nutrition of the lamb from which the ova were obtained but not with variation in the culture media. R.T.L.

(274z) Of several hundred small mammals belonging to 15 species (mostly from the Washington-Baltimore area) examined for microfilariae, *Procyon lotor*, *Didelphis virginiana*, *Mephitis mephitis*, *Mustela frenata*, *M. vison*, *Sciurus carolinensis* and *Sylvilagus floridanus* were infected. Incidence varied with locality. M.MCK.

(274ba) Autopsies on 345 dogs gave an incidence of 22.3% of *Physaloptera* sp. Flotation and sedimentation were compared as means of diagnosing the ova in dog faeces. Sodium dichromate solution separated them in the greatest numbers and in the best condition. Sodium nitrate solution and sugar solution were less effective; sedimentation separated one-half to one-seventh as many ova as flotation methods. M.MCK.

(274bb) For five months faecal egg counts were made on nine pairs of monozygotic cattle twins, aged three to nine weeks when the experiments began. Egg counts varied as much between twins as between unrelated animals; nematode infection was therefore random and independent of genotype. M.MCK.

(274bc) Twenty-one days after oral administration to chicks of 100 ± 10 mechanically freed larvae or chemically softened eggs of *Ascaridia galli*, the average number of worms per chick was less than 1.5 but when the ova were injected into the duodenum an average of nearly five worms was recovered from each chick. The average number of worms retained was 5.5 when normal ova were administered orally and 6.2 when introduced into the duodenum. M.MCK.

(274bd) A single dose of 0.15 ml. of carbon disulphide administered orally to chickens which had been starved for 12 hours before treatment, removed 65% of worms from experimental *Ascaridia galli* infections. 0.3 ml. expelled 88% and 0.6 ml. removed all of the worms but killed a third of the birds. Fasting alone was unsuccessful and treatment of fowls without fasting was much less effective. The weight changes in treated fowls were compared with those in untreated infected birds and averaged a gain of 46.2 gm. for 0.15 ml. doses, a loss of 9.3 gm. for 0.3 ml. doses and a loss of 88.8 gm. for 0.6 ml. doses. Tests *in vitro* showed that aqueous carbon disulphide is toxic to *A. galli* and probably penetrates the cuticle. M.MCK.

(274be) *Trichinella* larvae were incubated at 37°C. in a nutrient fluid composed of ox serum ultrafiltrate and Simms' X6 solution. The larvae were removed and the fluid, containing the larval excretions and secretions, gave antigen positive results with sera of immunized rabbits and mice but not with sera from non-immunized animals. Mice injected with the antigen lost their worms more rapidly than non-injected controls. M.MCK.

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- bf. FELDMESSER, J. & FEDER, W. A., 1954.—“Some effects of altered oxygen tensions on certain plant-parasitic and soil-inhabiting nematodes *in vitro*.” 40 (5, Sect. 2), 18.
- bg. YUTUC, L. M., 1954.—“The incidence and prepatent period of *Ancylostoma caninum* and *Toxocara canis* in prenatally infected puppies.” 40 (5, Sect. 2), 18–19.
- bh. FRICK, L. P., RUSSELL, H. C. & RITCHIE, L. S., 1954.—“An investigation on the seasonal fluctuations of ascariasis in a region of high endemicity.” 40 (5, Sect. 2), 19.
- bi. BAUGHN, C. O. & BLIZNICK, A., 1954.—“The incidence of certain helminth parasites of the cat.” 40 (5, Sect. 2), 19.
- bj. WALTON, A. C., 1954.—“Parasites of the Amphibia.” 40 (5, Sect. 2), 19–20.
- bk. WEHR, E. E., 1954.—“Blackhead of turkeys primarily transmitted through cecal worm eggs.” 40 (5, Sect. 2), 26.
- bl. KUNTZ, R. E., 1954.—“Biology of the schistosome complexes.” 40 (5, Sect. 2), 27.
- bm. OLIVER-GONZÁLEZ, J., BAUMAN, P. M. & BENENSON, A. S., 1954.—“Immunological aspects of *Schistosoma mansoni* infections.” 40 (5, Sect. 2), 27–28.

(274bf) In water sealed from air, increasing oxygen tension was produced by the oxidation of sodium sulphite (in concentrations of 100 to 400 p.p.m.) to sulphate. At an oxygen tension equivalent to 400 p.p.m. of sodium sulphite *Aphelenchoides olesistus* ceased to move after four minutes, *Rhabditis* sp. and *Meloidogyne* sp. after 15 minutes and *Heterodera rostochiensis* after 20 minutes; all resumed motion within two minutes after aeration, sometimes after 20 hours of immobilization. Given sufficient oxygen, sulphite and sulphate had no harmful effect on the nematodes. M.MCK.

(274bg) In 81 puppies, belonging to 17 litters, which were infected prenatally the prepatent period of *Ancylostoma caninum* ranged from 16 to 29 days and of *Toxocara canis* from 21 to 30 days. M.MCK.

(274bh) The incidence and intensity of ascariasis in adults and children, studied from 16 months at Mutsusawa, Japan, were essentially parallel although intense parasitization was more common among children. Incidence and worm burdens constantly decreased from summer to December. Ascariasis in Japan evidently depends largely on agricultural practices, food habits and climatic conditions. M.MCK.

(274bi) The incidence of helminth species in 126 cats from rural upper New York State was: *Toxocara cati* 62.7%, *Ancylostoma caninum* 36.5%, *Aelurostrongylus abstrusus* 15.1%, *Capillaria aerophila* 15.1%, *Physaloptera rara* 2.4%, *Taenia* sp. 11.1% and *Dipylidium* sp. 1.6%. M.MCK.

(274bk) Oral administration of large doses of infective *Histomonas meleagridis* from cultures or from infected turkey caeca failed to infect turkey poults, but administration of infected faeces deposited on soil seven months previously and containing *Heterakis gallinae* eggs produced blackhead and large worm burdens and killed many of the birds. Evidently, the naked protozoan is relatively unimportant in blackhead transmission and control depends mainly on preventing *H. gallinae* infections. M.MCK.

(274bl) Kuntz points out that as recent work on schistosomiasis has revealed many facts regarding geographical variations, expressed in terms of physiological as well as taxonomic relationships, the problems are no longer simple but are inter-related schistosome complexes which may vary with geographical location and different biological circumstances. R.T.L.

(274bm) During the course of infection of animals or man with specific stages of *Schistosoma mansoni* stage-specific antibodies are produced. In man the titre of anti-cercarial antibodies is high during early schistosomiasis but falls or becomes negative later; anti-adult precipitins persist throughout the infection in a relatively low titre; circum-oval precipitins increase in titres as infection progresses, consistently with the accumulation of ova in the tissues. M.MCK.

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- bn. SCOTT, J. A. & MACDONALD, B. M., 1954.—“Morphological changes in *Litomosoides carinii* at the third and fourth molts.” 40 (5, Sect. 2), 31.
- bo. MCINTOSH, A., 1954.—“A new distribution record of *Dirofilaria tenuis* Chandler, 1942, and the discovery of the male.” 40 (5, Sect. 2), 31–32.
- bp. HILL, C. H. & ZIMMERMAN, R. E., 1954.—“Use of a standard planetary-type mixing machine for separating eggs of the swine whipworm, *Trichuris suis*, from feces.” 40 (5, Sect. 2), 32.
- bq. HOFFMAN, G. L., 1954.—“A diplostomulum (Trematoda: Strigeida) in a tumor-like cyst on the brain of the stickleback, *Eucalia inconstans*.” 40 (5, Sect. 2), 32.
- br. ULMER, M. J., 1954.—“Experimental definitive hosts for *Fibricola cratera* (Barker and Noll, 1915) Dubois 1932 (Trematoda: Diplostomatidae).” 40 (5, Sect. 2), 33.
- bs. KRUIDENIER, F. J. & STIREWALT, M. A., 1954.—“Mucoid secretion by schistosome cercariae.” 40 (5, Sect. 2), 33.
- bt. MOORE, D. V., 1954.—“Sexual anomalies in the male *Schistosoma japonicum* (Formosan strain).” 40 (5, Sect. 2), 33.

(274bn) Each morphological stage in the growth of *Litomosoides carinii* has a characteristic type of stoma. R.T.L.

(274bo) The male of *Dirofilaria tenuis*, found in *Procyon lotor* in Florida, is now described for the first time. It is 41 mm. to 43 mm. in length. The oesophagus is 0.47 mm. long. The cloacal aperture is 0.07 mm. to 0.077 mm. from the posterior end and there are 9 or 10 irregularly arranged genital papillae on each side. The spicules are 0.2 mm. and 0.09 mm. long. M.MCK.

(274bp) Hill & Zimmerman have devised a new and quick technique for the recovery of *Trichuris suis* ova from pig faeces. A cylindrical, 200 bronze-mesh wire basket containing about 400 gm. of faeces is placed in a large copper vessel filled with water. A four-bladed revolving paddle travels round the inside wall of the basket keeping the mesh unclogged. By means of a tap with a small jet about 2 gallons of water are added and the water in the large vessel is then collected into a large glass jar for sedimentation. A little is finally flushed through the basket. Over 90% of the ova can be recovered from the sediment. M.MCK.

(274bq) A new strigeid metacercaria, still to be described, is reported from the ventricles and in cysts which had formed at the caudo-dorsal position of the optic lobes in sticklebacks (*Eucalia inconstans*) at Grand Forks, North Dakota. M.MCK.

(274br) Diplostomula of *Fibricola cratera*, collected near Ames, Iowa, from *Rana pipiens*, were fed to white rats and mice. Seventy days later many adults were present in the mice but only immature worms in the rats. This disagrees with previous reports in which white rats are listed as experimentally suitable hosts for *F. cratera*. M.MCK.

(274bs) Glands of the “penetration” complex of the cercaria of *Schistosoma mansoni* are now commonly differentiated into acidophilic and basophilic groups. Strong red to red-violet reactions by cercarial tissues to the periodic acid-Feulgen technique of Hotchkiss indicate the presence of polysaccharide, mucopolysaccharide, glycoprotein or glycid compounds in this cercaria. Hotchkiss-positive secretions can be differentiated in three pairs of the “penetration” glands in young intra-redial cercariae, accumulating as the glands and cercariae develop. The secretions are partially discharged by the mature cercaria while still in the snail but are mostly retained in the free-swimming stage, probably to be used during or after penetration of the definitive host. M.MCK.

(274bt) Three anomalous male *Schistosoma japonicum* (Formosan strain) were obtained from hamsters with bisexual infections. Two had supernumerary testes and one of these two had also a duplicate set of vas efferens and seminal vesicle. The third possessed a well developed ovary and ootype. M.MCK.

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- bu. LUTTERMOSER, G. W. & BOND, H. W., 1954.—“Results of laboratory screening tests of compounds for possible schistosomacidal agents. I. Rhodanines and hydantoin.” 40 (5, Sect. 2), 33–34.
- bv. BOND, H. W. & LUTTERMOSER, G. W., 1954.—“Results of laboratory screening tests of compounds for possible schistosomacidal agents. II. N-(9'-xanthenyl) carbamates.” 40 (5, Sect. 2), 34.
- bw. KEMP, H. A., HUNTER, III, G. W., WILKINS, O. P., SMALLEY, H. & DASHIELL, M. A., 1954.—“Studies on schistosomiasis. XI. Some ointments examined for protection against *S. mansoni* cercariae in preliminary screening tests.” 40 (5, Sect. 2), 34.
- bx. BAUMAN, P. M., DURAN, L. B. & McMULLEN, D. B., 1954.—“Effectiveness of Abbott's Insect Repellent Cream (E-4856) as a protective barrier against *Schistosoma mansoni* in mice.” 40 (5, Sect. 2), 35.
- by. HARRY, H. W. & CUMBIE, B. G., 1954.—“A physiographic correlation of freshwater habitats and the distribution of *Australorbis glabratus* in Puerto Rico.” 40 (5, Sect. 2), 35.
- bz. HARRY, H. W. & CUMBIE, B. G., 1954.—“Host-parasite relationships between *Australorbis glabratus* and the trematodes infecting it in Puerto Rico, with special reference to *Schistosoma mansoni*.” 40 (5, Sect. 2), 35.

(274bu) Of 22 rhodanines, 20 hydantoins and 3 thiohydantoins tested, 5-(3',4'-dichlorobenzylidene) rhodanine, 5,5-diphenylhydantoin, 5-(*p*-chlorophenyl)-5-methylhydantoin, 5-(4'-chlorobenzylidene) rhodanine and 5-(3',4'-methylenedioxybenzylidene) rhodanine were effective against schistosomes in mice when the maximum tolerated dose, in 10% gum acacia, was given intraperitoneally daily for 5 days. None were active when given orally as suspensions in 10% gum acacia. The first two approached miracid-D in activity. Preliminary tests indicated that 3-(9'-xanthenyl) rhodanine and 3-(9'-xanthenyl)-5,5-diphenylhydantoin are also active.

M.MCK.

(274bv) About half of 15 N-(9'-xanthenyl) carbamates tested against *Schistosoma mansoni* in mice had some effect when administered intraperitoneally and a few approached miracid-D in activity. None was effective when given orally. Of the unsubstituted carbamates used as starting materials in N-(9'-xanthenyl) carbamate synthesis, only *n*-cotadecyl showed definite activity. Representative carbamates dissolved in edible oils were not active, but miracid-D base dissolved in sesame oil was active when administered either orally or intraperitoneally.

M.MCK.

(274bw) Of 135 ointments and chemicals tested [but unspecified] for use against the cercariae of *Schistosoma mansoni*, 34 gave complete protection to mice when the shaved belly of each was exposed to 100 cercariae for 30 minutes.

M.MCK.

(274bx) Abbott's Insect Repellent Cream (E-4856), applied once to the tails of mice prior to exposure to *Schistosoma mansoni* cercariae prevented infection for six hours, was highly effective for 12 hours and offered some protection up to 72 hours despite, in the last instance, three daily soakings of the tail after application.

M.MCK.

(274by) The largest physiographic region of Puerto Rico, which consists mainly of volcanic rocks, supports *Australorbis glabratus* only in the low-gradient streams of the Caguana penepale. In the coastal limestone strips the snail occurs only in sink-ponds of the northern belt. The chief sites of *A. glabratus* in Puerto Rico are the low-gradient streams of the coastal and upland alluvium.

M.MCK.

(274bz) *Australorbis glabratus* collected at 55 fresh-water stations in Puerto Rico contained four cercariae in addition to four species of metacercariae, viz., *Cercaria marini*, *C. paucispina*, *C. neotropica* and the cercaria of *Schistosoma mansoni*, which was however only present at six stations representing only four distinct areas of the island. *C. neotropica* was found in *Tropicorbis riisei* also.

R.T.L.

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- ca. STIREWALT, M. A., 1954.—“Effect of snail maintenance temperatures on development of *Schistosoma mansoni*.” 40 (5, Sect. 2), 35.
- cb. OLIVIER, L. & BARBOSA, F. S., 1954.—“Survival and weight loss of *Australorbis glabratus* from Pernambuco, Brazil, when kept out of water at various relative humidities.” 40 (5, Sect. 2), 36.
- cc. KAGAN, I. G., 1954.—“The *in vitro* activity of schistosome cercariae and miracidia in serum from experimental, natural, and immunized hosts.” 40 (5, Sect. 2), 36.
- cd. LEVINE, D. M. & KAGAN, I. G., 1954.—“The *in vitro* activity of cercariae of *Schistosoma mansoni* in serum of normal and immunized animals.” 40 (5, Sect. 2), 36–37.
- ce. OLIVER, Jr., J. H. & SHORT, R. B., 1954.—“Longevity of *Schistosomatum douthitti* miracidia.” 40 (5, Sect. 2), 37.
- cf. NEZ, M. M., 1954.—“Gametogenesis in *Schistosomatum douthitti* (Cort).” 40 (5, Sect. 2), 37.

(274ca) In *Australorbis glabratus* infected with one or five miracidia of *Schistosoma mansoni*, the parasite developed best at 26°C. to 33°C.; snail mortality increased at 33°C. to 35°C. and from 23°C. to 25°C. cercarial production was less efficient in every respect. M.MCK.

(274cb) *Australorbis glabratus* lived up to 233 days in open shallow containers at 85%–95% humidity at 25°C.–29°C., and 200 days in closed jars at 92%–96% humidity, losing only 10% by weight in the first 94 days. At 0%–5% humidity some lived over 50 days. Few snails survived a 40% loss of weight. M.MCK.

(274cc) Cercariae and miracidia of *Schistosoma mansoni* and *Schistosomatum douthitti* were placed in serum of monkeys harbouring these schistosomes, in serum of rabbits immunized with the schistosome antigens and in serum of man harbouring *Schistosoma haematobium* and *S. mansoni*. In nearly all instances membranes formed around the cercariae. Miracidia were immobilized, proving the presence of schistosome antibody. Although serum from five monkeys exposed to *Schistosomatum douthitti* hardly reacted with any of the larvae, that of two other monkeys reacted with all except *Schistosoma mansoni* miracidia. Miracidia of *Schistosomatum douthitti* were immobilized at titres of 1:400 with anti-*S. douthitti* rabbit serum and at titres of 1:25 to 1:100 with anti-*Schistosoma mansoni* rabbit serum. M.MCK.

(274cd) The *in vitro* activity of fresh and inactivated serum from a number of animals was tested against *Schistosoma mansoni* cercariae before and after immunization with a cercarial antigen. Fresh serum immobilized cercariae but for some species was not cercaricidal for many hours. Fresh horse serum agglutinated cercariae. Serum inactivated at 57°C. for 30 minutes lost its ability to immobilize cercariae and agglutination of cercariae was then observed in normal sera of cow, sheep, steer, goat, dog and pig. When immunized with bi-weekly intravenous injections of a homogenate of 200–30,000 frozen *S. mansoni* cercariae, circumcercarial membranes were observed in cat serum after one injection of antigen, in chicken, pigeon and rabbit sera after two, in horse, cow, sheep, goat and monkey sera after three, in mouse, rat, hamster and pig sera after four and in dog and guinea-pig sera after five. During the course of immunization all showed an inactivated serum agglutination of cercariae. R.T.L.

(274ce) The death rate of 1,140 actively swimming miracidia of *Schistosomatum douthitti* hatched at 22.2°C.–24.4°C. was 25% by the end of the third hour, 50% by the end of the ninth hour and 75% by the end of the sixteenth hour. A few lived for 24 hours but all were dead by the twenty-fifth hour. An initial gradual death rate was followed by a rapid one after the sixteenth or eighteenth hour. M.MCK.

(274cf) The spermatocytes of *Schistosomatum douthitti*, unlike those of the schistosomes of man, do not break apart during division but remain united in 32-celled rosettes as in hermaphroditic flukes, each spermatozoid having two cytoplasmic flagella. In the egg, the oocytes remain diffuse until development begins after being laid in host tissue. The diploid chromosome number in the somatic and germ cells of both sexes is 14. M.MCK.

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- cg. HARKEMA, R., 1954.—"Observations on schistosome dermatitis in interior Alaska." 40 (5, Sect. 2), 37.
- ch. PEARSON, J. C., 1954.—"The life cycles of *Alaria arisaemoides* Augustine & Uribe, 1927, and *Alaria canis* LaRue & Fallis, 1936 (Trematoda: Diplostomidae), parasites of the red fox, *Vulpes fulva* (Desmarest)." 40 (5, Sect. 2), 37-38.
- ci. CABLE, R. M., 1954.—"The development of a species of *Opistholebes* in the final host, the affinities of some amphistomatous trematodes from marine fishes, and the allocreadioid problem." 40 (5, Sect. 2), 38.
- cj. HARGIS, Jr., W. J., 1954.—"Monogenetic trematodes of some Gulf of Mexico fishes." 40 (5, Sect. 2), 38.
- ck. PRICE, E. W., 1954.—"A new trematode from the lesser panda, *Ailurus fulgens*." 40 (5, Sect. 2), 38-39.
- cl. GOODCHILD, C. G., 1954.—"Homoplastic and heteroplastic transplantation of gorgoderine trematodes." 40 (5, Sect. 2), 39.
- cm. SADUN, E. H., 1954.—"Biology and distribution of *Opisthorchis viverrini* in Thailand." 40 (5, Sect. 2), 39.

(274cg) In 20 out of 80 collections of water investigated in Alaska, unidentified, phototropic, itch-producing cercariae were present in *Limnaea palustris*, *L. stagnalis* and *L. auricularia*. Several cases of schistosome dermatitis were noted in the Fairbanks and Fort Yukon areas. M.MCK.

(274ch) In the laboratory, *Alaria arisaemoides* developed in *Planorbula* and *A. canis* in *Helisoma trivolvis* and *H. campanulata*. The mother and daughter sporocysts occurred in the blood vascular system. The cercariae emerged 18 to 30 days after infection of the molluscs and encysted in *Bufo americanus*, *Rana pipiens*, *R. sylvatica* and *R. clamitans*. When fed to a fox the metacercariae became unencysted diplostomula in the lungs then migrated by the bronchi and trachea to become adult in the small intestine. But in laboratory mice, ferrets, deer mice, ducklings and chicks they migrated into and encysted in the tissues without undergoing further development. R.T.L.

(274ci) Since in *Opistholebes* sp. from *Diodon hystrix* the body form changes during development from that of a distome to that of an amphistome, Cable is of the opinion that the amphistome plan is phylogenetically secondary in the Opistholebetidae and probably in the Gyliachenidae and Cephaloporidae. These families all contain genera ranging from distome to amphistome in adult form. They are probably aberrant relatives of other well known groups and not related to the paramphistomes. There are affinities between the Opistholebetidae and Opecoelidae as distinct from other groups of the allocreadioid complex, which is considered to be polyphyletic. It is suggested that Gyliachenidae is related to Lepocreadiidae and that Cephaloporidae is an aberrant group of Plagiorchoidea. M.MCK.

(274cj) From a study of monogenetic trematodes from 49 species of fish in the Gulf of Mexico, Hargis suggests that *Pyragraphorus* has evolved from *Microcotyle* or a similar form. Using previously established homologies of clamp sclerites as a basis, the theory is propounded that Diclidophoridae have evolved from a form similar to some species of *Tagia*. Host specificity in the Monogenea is apparently more rigid in marine than fresh-water habitats. M.MCK.

(274ck) *Ogmogaster ailuri* n.sp. from the lesser panda, *Ailurus fulgens*, is distinguished from *O. pagargi*, *O. sikae* and *O. indica* mainly because the operculum of the egg has two slender, short filaments instead of one. M.MCK.

(274cm) An examination of 26,000 stools showed that *Opisthorchis viverrini* is endemic in the north and north-east provinces but not in the central or southern regions of Thailand. Differences were noted in its incidence in Siamese and Chinese living in the same town, in one instance the incidence was 50.4% and 2.9% respectively. Sadun estimates that one and a half to two million people, mostly in the north-east of Thailand, are infected. The most important endemic areas are in the Mekong valley. M.MCK.

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- cn. SADUN, E. H., 1954.—"The epidemiology of *Opisthorchis viverrini* in Thailand." 40 (5, Sect. 2), 39-40.
- co. FOSTER, A. O., 1954.—"The challenge of helminthic parasitism in veterinary chemotherapy." 40 (5, Sect. 2), 41.
- cp. FREEMAN, R. S., 1954.—"Studies on the biology of *Taenia crassiceps* (Zeder, 1800) Rudolphi, 1810." 40 (5, Sect. 2), 41.
- cq. JONES, A. W., KERLEY, C. & SNEED, K. R., 1954.—"New species in the genus *Corallobothrium* Fritsch 1886." 40 (5, Sect. 2), 41.
- cr. SMITH, C. F., 1954.—"Attempts at *in vitro* cultivation of the fowl cestode, *Raillietina cesticillus*." 40 (5, Sect. 2), 41-42.
- cs. HALEY, A. J., 1954.—"A difference in the susceptibility of male and female hamsters to infection with the rat nematode, *Nippostrongylus muris*." 40 (5, Sect. 2), 42.

(274cn) The incidence of *Opisthorchis viverrini* among different peoples in Thailand depends mainly on dietary habits. Infection was produced by feeding cats on some of the common raw fish dishes sold in the market for human consumption. Regions where human infection is unknown, as well as endemic regions, contain naturally infected cats and dogs. Sadun records 5,896 flukes from one autopsy. M.MCK.

(274co) It is estimated that helminth parasites cost the United States' livestock industry about \$400,000,000 annually. No anthelmintic treatment can be recommended against some 90 of about 145 species injurious to food animals. Attention is drawn to the failure of anthelmintics against immature or extra-intestinal worms, the scarcity of "polyvalent" anthelmintics, the paucity of comparative evaluations, of validity of screening tests, mechanisms of anthelmintic action, and of criteria and standards of testing. M.MCK.

(274cp) Adult *Taenia crassiceps* were found in southern Ontario in 27 of 78 *Vulpes fulva*, and the larval stages in *Tamias striatus*, *Microtus pennsylvanicus* and *Ondatra zibethica*. Oral administration of *Taenia crassiceps* eggs infected mice, *Peromyscus maniculatus*, *Sciurus carolinensis* and *Tamias striatus*. Feeding mice with eggs or inoculating them with larvae produced mature cysticerci in as little as five weeks. These exhibited endogenous and exogenous budding, the latter evidently normal for the species and occurring usually at the non-scolex pole. Cysticerci failed to establish infections in *Canis latrans* but when fed to foxes or dogs gravid worms were recovered five weeks later. M.MCK.

(274cq) Specimens of *Corallobothrium* with sphinctered suckers were found in Tennessee and Oklahoma. The genus is therefore subdivided into two subgenera, viz., *Corallobothrium* (retained for those without sphinctered suckers) and *Megathylacoides* which is proposed for those with sphinctered suckers, in recognition of a possible relationship with the sphinctered proteocephalan *Megathylacus*. M.MCK.

(274cr) Adult *Raillietina cesticillus* did not survive in semi-solid or solid Ringer's-glucose-corn starch culture, but lived in liquid solution for 60 hours at 40°C. Added vitamins and chicken serum were toxic in high concentrations but in low concentrations were invigorating. Solutions sterilized with streptomycin sulphate increased worm activity but decreased survival times. Chicken serum and vitamins in Ringer's-glucose-corn starch solutions under constant mechanical stimulation at 40°C. provided the best environment for *R. cesticillus*. M.MCK.

(274cs) In 25 hamsters experimentally infected with *Nippostrongylus muris*, 4% to 12% of the nematodes developed in the 15 males while 0% to 1% developed in the 10 females. M.MCK.

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- ct. LIN, S., RITCHIE, L. S. & HUNTER, III, G. W., 1954.—“Acquired immunologic resistance against *Schistosoma japonicum*.” 40 (5, Sect. 2), 42.
- cu. MOON, A. P. & HUNTER, III, G. W., 1954.—“Studies on schistosomiasis. VIII. Failure of copper oleate to protect mice against the penetration of the skin by cercariae of *Schistosoma mansoni*.” 40 (5, Sect. 2), 43.
- cv. OTORI, Y., SANDIFORD, C. S. & RITCHIE, L. S., 1954.—“Persistence of egg-laying by *Oncomelania nosophora* females following isolation from males.” 40 (5, Sect. 2), 43.
- cw. LEIGH, W. H., 1954.—“Schistosome dermatitis in a south Florida lake.” 40 (5, Sect. 2), 43.
- cx. BAIR, T. D., 1954.—“Host-parasite glycogen relationships in *Haematoloechus medioplexus*.” 40 (5, Sect. 2), 43-44.
- cy. BEILFUSS, E. R., 1954.—“The life histories of *Phyllodistomum lohrenzi* Loewen, 1935, and *P. caudatum* Steelman, 1938 (Trematoda: Gorgoderinae).” 40 (5, Sect. 2), 44.

(274ct) That light infections with *Schistosoma japonicum* give rise to some immunological resistance to subsequent infections has been demonstrated in mice and hamsters by giving a challenging infection some weeks after an immunizing period. Monosexual male infections gave as much resistance as bisexual infections. In mice tested for resistance by the injection of 0.1 ml. of a 1:1,000 dilution of whole worm saline antigen the subsequent worm burden was also reduced as compared with that of the controls.

R.T.L.

(274cu) Moon & Hunter found that copper oleate did not protect shaved mice when they were exposed to *Schistosoma mansoni* cercariae for 30 minutes; it gave only 86.8%–97.1% protection *in vivo*, although *in vitro* it was 100% effective.

M.MCK.

(274cv) Isolated and mated females of *Oncomelania nosophora* produced equal numbers of young in the laboratory during the first summer. During the succeeding summer, females isolated for the first time increased reproduction, but those isolated for the second time produced far fewer young. Judging from three females, reproduction may be impossible in the third year of isolation.

M.MCK.

(274cw) Dermatitis from a Florida lake, similar to that reported from marshes in the duck-hunting season, was traced for the first time to a cercaria. It was recovered from *Physa pumilio* and resembled *Trichobilharzia physellae*. Since blue-winged teal, pintail ducks and spoonbilled ducks, hosts of *T. physellae*, winter in south Florida, schistosome cercariae are probably widely distributed there.

M.MCK.

(274cx) Glycogen analyses of *Haematoloechus medioplexus* were run on pooled worm samples and on small pieces of liver from the infected *Rana pipiens*. The data showed no constant relationship between the glycogen levels. This suggests that *H. medioplexus* is capable of maintaining its own glycogen stores independently of those of its host.

M.MCK.

(274cy) The miracidia of *Phyllodistomum lohrenzi*, hatching from eggs passed in the urine of the green sunfish, *Lepomis cyanellus*, settled in the gills of *Musculium transversum* and in 2–3 months a single generation of daughter sporocysts gave rise to macrocercous cercariae. These either encysted within the daughter sporocysts or were released and encysted when eaten by larvae of *Oecetis cinerascens*, *O. inconspicua* or *Leptocella* sp. When these caddis fly larvae were eaten by the green sunfish the flukes matured in 2–3 months. *Phyllodistomum caudatum* exhibited a similar cycle in *Ameiurus melas* and *Musculium elevatum* but no second intermediate host was traced. The cercariae of *P. lohrenzi* and *P. caudatum* were found to be identical with *Cercaria coelocerca* and *C. raiacauda* respectively.

M.MCK.

274—Journal of Parasitology (cont.)

- cz. DYKE, H. VAN, 1954.—"Acquired immunity in mice infected with *Postharmostomum heliciis* (Trematoda: Brachylaeamatidae)." 40 (5, Sect. 2), 44.
 da. DYKE, H. VAN, 1954.—"Variation in size of *Postharmostomum heliciis* (Trematoda: Brachylaeamatidae) in different rodent hosts." 40 (5, Sect. 2), 44-45.
 db. LEIGH, W. H., 1954.—"Notes on the life history of *Fibricola texensis* Chandler, 1942, in Florida." 40 (5, Sect. 2), 45.
 dc. WALTON, A. C., 1954.—"Parasites of the Amphibia. Trematoda." 40 (5, Sect. 2), 45.
 dd. CAMPAGNA, M., SWARTZWELDER, C. & COMER, E. O., 1954.—"Human cysticercosis in the United States." 40 (5, Sect. 2), 46.

(274cz) The immunity of albino mice to superinfection of *Postharmostomum heliciis* was ascertained 25, 40 and 60 days after initial infection by the recovery of reduced numbers of stunted worms as compared with controls, 14 days after the challenging dose. Resistance was not increased by lengthening the period between infections

M.MCK.

(274da) Metacercariae of *Postharmostomum heliciis* were fed to albino mice, albino rats and laboratory-reared *Peromyscus maniculatus* at the rate of 10 metacercariae per gm. of body-weight. At autopsy seven days after infection the mean lengths of flukes were 1.998 mm. for albino mice and 2.634 mm. for *P. maniculatus*, 14 days afterwards 2.655 mm. for albino mice and 3.477 mm. for albino rats, and after 35 days 3.514 mm. for albino mice and 4.33 mm. for rats.

M.MCK.

(274db) Encapsulated larvae of diplostomulum type from *Rana pipiens sphenoccephala* in south Florida were fed to mice, rats and hamsters. They developed in 10 days into adult strigeids closely resembling *Fibricola texensis*, but the distribution of the vitellaria varied and extended considerably behind the level of the posterior testis, thus differing from *F. texensis* and *F. lucida*. In day-old chicks most of the worms were eliminated in 10 days.

M.MCK.

(274dd) Since 1887, 42 definitely established cases of cysticerciasis, including two now recorded for the first time, have been recorded in the U.S.A. In only three of them was there indisputable evidence that the infection had been acquired in the U.S.A. The infections occurred in the brain, subcutaneous tissues, musculature, eye and spinal cord.

M.MCK.

275—Journal of Pediatrics.

- a. ASKUE, W. E. & TUFTS, E., 1954.—"Phthalylsulfathiazole (sulfathalidine) in the treatment of enterobiasis (pinworm infection)." 44 (4), 380-385.
 b. BUMBALO, T. S., GUSTINA, F. J. & OLEKSIK, R. E., 1954.—"The treatment of pinworm infection (enterobiasis). A comparative study of three oxyuricides." 44 (4), 386-391.

(275a) Cremothaldine, a trade preparation of phthalylsulphathiazole cured 23 out of 29 children with enterobiasis in a children's hospital and 15 out of 32 individuals of all ages in a clinic. Daily doses of 2 gm. to 6 gm. were given for two weeks. In hospital five out of five children and five out of eight in the dispensary were cured by a daily dose of 1 gm. to 8 gm. for one week. Three to ten tablets each containing 0.2 gm. of Neomycin and 0.3 gm. of sulphathalidine cured nine children when given twice daily for seven days; there were no failures. As anorexia, nausea or vomiting occurred in some individuals the effectiveness of smaller doses should be studied.

R.T.L.

(275b) In a comparative study on groups of children infected with *Enterobius* varying from 2½ years to 16 years of age subsequent Scotch tape smears indicated a cure in 85% after piperazine hexhydrate syrup, in 38% after Terramycin (in dose of 5 mg. per lb. body-weight) and in 7% after dehydrated garlic syrup. The poor results from garlic may have been due to some error. If the high rates of cure reported by other investigators were confirmed its low cost and complete lack of toxicity should render it an ideal anthelmintic.

R.T.L.

276—Journal of Wildlife Management.

- a. WEHR, E. E. & HERMAN, C. M., 1954.—“Age as a factor in acquisition of parasites by Canada geese.” 18 (2), 239–247.

(276a) An examination of a number of *Branta canadensis*, captured when two to eight weeks old, revealed nine helminth species. In 29 goslings from a refuge in Michigan four species of nematodes, two of cestodes and three of trematodes occurred while in 17 goslings from the Utah refuge only one species of nematode and two of cestodes were found. A table lists the parasitic incidence in eight goslings which died of heavy worm infections within a few days of capture. The goslings acquired most of their infections during the first week of life. Parasites with direct life-histories were the more prevalent. *Prosthogonimus* sp. occurred in young birds only. G.I.P.

277—Khirurgiya. Moscow.

- a. DZHAVAD-ZADE, M. D., 1954.—[Echinococcosis of congenitally solitary kidney.] Year 1954, No. 1, pp. 175–176. [In Russian.]
b. ZAGAIKAN, O. V., 1954.—[Problem of surgical ascariasis.] Year 1954, No. 3, pp. 82–83. [In Russian.]
c. POPOVICH, P. P., 1954.—[A case of helminthic abscess.] Year 1954, No. 3, pp. 85–86. [In Russian.]

278—Kyushu Agricultural Research.

- a. GOTO, S., 1954.—[On the influence of some factors upon the pathogenicity of nematode root rot of sweet potato. 1. Temperature and moisture of soil.] No. 13, pp. 15–16. [In Japanese.]

279—Kyushu Memoirs of Medical Sciences.

- a. MIYAZAKI, I., 1954.—“Studies on *Gnathostoma* occurring in Japan (Nematoda: Gnathostomidae). I. Human gnathostomiasis and imagines of *Gnathostoma*.” 5 (1), 13–27. [Reprint.]

(279a) In Japan *Gnathostoma spinigerum* occurs in 27.5% of the cats and 4% of the dogs in Kyushu. It also occurs in man causing a creeping eruption. It is gradually spreading. Its chief vectors are the fishes, *Ophicephalus argus* and the less widely distributed *O. tedianus*. *G. nipponicum* infects 5% of the Japanese weasels (*Mustela sibirica itatsi*) in Kyushu, and is present also in Honshu and Shikoku. *G. doloresi* is frequently found in boars in Kyushu, Honshu and Shikoku but only occasionally in hogs. The existence of *G. hispidum* in Japan is doubtful. The specimens reported from man by Morishita in 1924 have since been identified by him as *G. doloresi*. The three species *G. spinigerum*, *G. nipponicum* and *G. doloresi* differ from one another in the extent and shape of the cuticular spines of which those with three teeth are the most distinctive. The ova of *G. doloresi* are easily distinguished by their smaller size and by the presence of a cap at each end. R.T.L.

280—Leaflet. Ministry of Agriculture, Northern Ireland.

- a. ANON., 1954.—“Parasitic worm diseases.” No. 91, 7 pp. [Revision of leaflet published in 1950.]

281—Leaflet. United States Department of Agriculture.

- a. SPEARS, J. F., 1954.—“The golden nematode of potatoes and tomatoes. How to prevent its spread.” No. 361, 4 pp.

282—Maandschrift voor Kindergeneeskunde.

- a. DIJK, I. J. VAN, 1954.—“Di-ethyl-carbamazine, een nieuw middel tegen ascariasis.” 22 (2), 57-59. [English & French summaries p. 59.]

(282a) Van Dijk has treated two children suffering from ascariasis with diethyl carbamazine. Details of the dose rates are given. This drug is recommended on account of its low toxicity. S.W.

283—Meddelelser fra Statens Forsøksvirkksomhed i Plantekultur. Copenhagen.

- a. ANON., 1954.—“Forsøg med varmtvandsbehandling af jordbaerplanter med henblik på bekaempelse af jordbaerdl.” No. 517, 4 pp.

(283a) Experiments at the Plant Pathological Research Station at Spangsbjerg (Denmark) have shown that warm-water treatment of strawberry plants is effective in controlling *Aphelenchoides* infection. Plants should be immersed for 10 minutes at 46.2°C. and then immediately placed in cold water for 10 to 15 minutes. Of severely infested plants treated in this way in August 1952, between 60% and 70% were living in April 1953 and were free of eelworm. Of the controls, about the same number survived but 11% were still infected. A.E.F.

284—Medical Journal of Australia.

- a. DAVIS, N. C., 1954.—“Filariar granuloma of spermatic cord.” 41st Year, 1 (16), 597-598.

285—Medicina Colonial. Madrid.

- a. APARICIO GARRIDO, J. & PRIETO LORENZO, A., 1954.—“Una nueva terapéutica de las helmintiasis intestinales por nematodos. Experiencias *in vitro* con el fermento proteolítico ‘papaina’.” 24 (1), 5-13.

(285a) A commercial product (Vermizym) containing papain (ficin) was dissolved in water to give a 4% solution of the enzyme. Naturally expelled *Ascaris lumbricoides*, *Enterobius vermicularis* and vermifugally expelled *Ancylostoma duodenale* kept in the solution at 37°C. were killed, the first in two hours, the others in one hour. M.MCK.

286—Meditsinskaya Parazitologiya i Parazitarnie Bolezni. Moscow.

- a. LEIKINA, E. S. & GUSEINOV, G. A., 1954.—[Result of application of serological reactions in the determination of the stage of ascariasis.] Year 1954, No. 1, pp. 79-83. [In Russian.]
b. SAVCHENKO, V. S., 1954.—[Studies on the anthelmintic effect of fractions of certain ethereal oils. Preliminary communication.] Year 1954, No. 1, pp. 84-88. [In Russian.]

(286a) In order to diagnose early cases of *Ascaris* infestation in man in Russia, Leikina & Guseinov employed two serological tests, the precipitation of antigen on living *Ascaris* larvae and the ring precipitation test. When these tests were carried out among 220 people, the authors found the first reaction specific in 47.7% and the second in 37.6%, while an increase in eosinophilia was found in only 12.5%. The positive results obtained in this serological diagnosis were confirmed by the results of subsequent treatment. C.R.

(286b) Savchenko found that fractions of ethereal oils such as carvone, linalool, cineole and anethole *in vitro* kill pig ascarids, liver-flukes and earthworms. The speed of action of these drugs depends on the length of time for which they are in contact and the concentration and varies from a few minutes to a few hours. According to their lethal action they are arranged in this order: linalool, carvone, anethole and cineole. Carvone was prepared from *Carum carvi*, linalool from *Coriandrum sativum*, cineole from Eucalyptus oil and anethole from *Pimpinella unisum* and *P. anisetum*. C.R.

287—Medycyna Weterynaryjna.

- a. ŻULIŃSKI, T., STEFAŃSKI, W. & MATWIEJEW, M., 1954.—“Przypadek schorzenia pasożytniczego szczęki konia.” 10 (5), 264–265.
- b. DONIGIEWICZ, K., 1954.—“Leczenie robaczycy płuc u owiec za pomocą donosowego wprowadzania wodnego roztworu jodu w jodku potasu.” 10 (9), 550–552.

(287a) Cavities in the granular connective tissue of the swollen gums of a horse contained numerous eggs, larvae and adults of an unknown nematode identified by Stefański as *Rhabditis gingivalis* n.sp. This new species is figured [but not described]. In some places the jaw bone was replaced by connective tissue and only variously shaped bony rods remained.

G.I.P.

(287b) For the treatment of husk in sheep the introduction of an aqueous solution of iodine in potassium iodide into the lungs by a nasal syringe proved a more convenient method than tracheal injection and did not cause abortion in pregnant ewes. The dosage used was that recommended by Stefański, viz., 5 ml. for lambs, 10 ml. for one-year-old sheep and 12 ml. to 15 ml. for older sheep. The solution contained 1 gm. iodine and 2 gm. potassium iodide in 1,500 ml. distilled water and should be freshly prepared and during cold weather kept at 20°C. to 37°C. About 1,000 sheep were treated by this method. Their cough ceased within a few days and after a short time their weight increased.

G.I.P.

288—Nachrichtenblatt für den Deutschen Pflanzenschutzdienst. Berlin.

- a. KIRCHNER, H. A., 1954.—“Eine Schnellmethode zur Untersuchung von Bodenproben auf den Besatz mit Kartoffelnematodenzysten.” 8 (5), 81–86.

(288a) Kirchner describes a rapid method of counting potato root nematode cysts in soil samples, by means of which 500 samples of 40 c.c. each may be examined in a day by two workers. The apparatus consists essentially of a glass funnel of 400 c.c. capacity closed at the neck by a rubber bung with a wire handle and having the stem bent at an angle of 80° just beyond its juncture with the funnel. The inside of the latter is slightly roughened by etching. The sample of air-dried soil is placed in the stoppered funnel, a jet of water is played obliquely on to it causing it to whirl around. It is then allowed to settle, the rubber bung is pulled out and the soil and water flow down the stem leaving the cysts and floating material on the walls of the funnel where they are counted. Soils containing much humus are treated first with 5–6 c.c. of alcohol to prevent the vegetable matter from floating. Details are given of the system used for recording the infestivity of the samples.

M.T.F.

289—Nature. London.

- a. BREMNER, K. C., 1954.—“Cytological polymorphism in the nematode *Haemonchus contortus* (Rudolphi 1803) Cobb 1898.” [Correspondence.] 174 (4432), 704–705.
- b. SOMMERVILLE, R. I., 1954.—“The second ecdysis of infective nematode larvae.” [Correspondence.] 174 (4433), 751–752.
- c. ELLENBY, C., 1954.—“Environmental determination of the sex ratio of a plant parasitic nematode.” [Correspondence.] 174 (4439), 1016–1017.
- d. HAGUE, N. G., 1954.—“Concentration of potato root diffusate by vacuum distillation.” 174 (4439), 1018.

(289a) Bremner has studied the chromosomes of *Haemonchus contortus* from sheep and cattle. The diploid number for both forms is eleven in the males and twelve in the females but whereas in those from sheep the gonial metaphase chromosomes are all of similar size, in those from cattle there is one very large chromosome in the male and two in the female. This difference appears to be constant. The author was able to demonstrate experimentally the existence of a low percentage of a fertile hybrid form, but there is no evidence of naturally occurring hybrids to date. The work is continuing.

S.W.

(289b) Sommerville has studied the exsheathment of infective larvae of nematodes parasitic in sheep. In the laboratory, larvae were put into the contents of the rumen,

abomasum, duodenum and ileum and kept at 38°C.; larvae in cellophane bags were introduced by surgical means into these regions of the gut in live sheep. Infective larvae of *Haemonchus contortus*, *Trichostrongylus axei* and *Ostertagia circumcincta* exsheathed in the rumen but those of *T. colubriformis* and *Nematodirus* spp. remained sheathed until they reached the abomasum. Exsheathment of *Oesophagostomum columbianum* was not observed in the rumen, abomasum or small intestine. *Strongyloides papillosus* could not survive longer than half an hour in the rumen. From these observations, Sommerville suggests that exsheathment takes place in that region of the gut immediately preceding the normal site of the adult. Larvae of *T. colubriformis* exsheathed much more quickly than did those of *Nematodirus* spp. S.W.

(289c) Ellenby finds that when potatoes are infested with *Heterodera rostochiensis*, a high level of infestation is associated with a high proportion of male worms. The proportion of males to females was also higher in lateral roots than in the primaries. He concludes that this effect is due to the process of sex determination in this worm being "under environmental influence", and produces evidence in support of this view. D.W.F.

(289d) Hague reports that he has concentrated potato root diffusate by vacuum distillation at 5°C. and 1 mm. pressure to between 1% and 4% of the original volume. In some samples further concentration was effected by freeze drying. The efficiency of vacuum distillation was 90-95% but a loss of about 30% resulted from freeze drying. Dilutions prepared from these concentrates were used for hatching tests and an optimum hatch was observed, fewer larvae hatching from higher concentrations than that producing the optimum hatch. Further experiments indicate that inhibition of hatch from highly concentrated samples is associated with enhanced concentrations of the hatching factor. D.W.F.

290—North American Veterinarian.

- a. COOPERRIDER, D. E., 1954.—"Losses in cattle due to internal parasitism." 35 (5), 350-353.
- b. SENTER, H. G., 1954.—"Giant kidney worm infection." 35 (6), 446.
- c. FOLSE, D. S. & NEWBERNE, J. W., 1954.—"*Spirocerca lupi* infection in dogs. A four-year survey." 35 (7), 519-522.
- d. SMITH, H. C., LOVELL, V. E. & REPPERT, R. F., 1954.—"Filarial dermatosis of sheep." 35 (8), 588-589.
- e. TURK, R. D., 1954.—"Parasites not transmissible from animals to man." 35 (8), 609-610.

(290a) Cooperrider estimates the cost to the producer of internal parasites in cattle. A total of 6,854 sick cattle were examined around Athens, Georgia, and 271 were infected with internal parasites. About 90% suffered from haemonchiasis, trichostrongylosis, bunostomiasis or oesophagostomiasis. The age at which the cattle suffered most coincided with the time during which they received the least attention from the farmer and the average loss per head is given as \$28.47 which does not include the extra labour involved. Most of this loss is considered to be avoidable. M.MCK.

(290b) Senter briefly describes clinical symptoms observed in a dog in the urine of which there were numerous ova of *Diocotophyme renale*. R.T.L.

(290c) Folse & Newberne give a general account of *Spirocerca lupi* in dogs. From post-mortem reports on 795 dogs in eastern Alabama they established that 5.4% were infected (3.2% of the males and 7.9% of the females). M.MCK.

(290d) Filarial dermatosis caused by migrating larvae of *Elaeophora schneideri* is reported in sheep in Nebraska, with a detailed description of the disease. M.MCK.

(290e) This is an examination of certain "parasites" wrongly assumed to be contracted from animals. Among them were grape seeds, plant fibres, hair worms (mermithids and gordiaceans) and crab lice (*Phthirus pubis*). *Enterobius vermicularis* infection is sometimes assumed erroneously to have been acquired from dogs and cats. M.MCK.

291—Parasitology.

- a. DINNIK, J. A. & DINNIK, N. N., 1954.—“The life cycle of *Paramphistomum microbothrium* Fischöder, 1901 (Trematoda, Paramphistomidae).” 44 (3/4), 285-299.
- b. MORIYA, S., 1954.—“The reliability of the current diagnostic methods for the identification of helminth eggs.” 44 (3/4), 300-303.
- c. CROFTON, H. D., 1954.—“The ecology of the immature phases of trichostrongyle parasites. V. The estimation of pasture infestation.” 44 (3/4), 313-324.
- d. FYFE, M. L., 1954.—“*Tricotyledonia genypteri* n.g., n.sp., a three-suckered trematode from the red ling, *Genypterus blacodes* Bloch & Schn.” 44 (3/4), 325-328.
- e. KULASIRI, C., 1954.—“Some cestodes of the rat, *Rattus rattus* Linnaeus, of Ceylon and their epidemiological significance for man.” 44 (3/4), 349-352.
- f. HOPKINS, S. H., 1954.—“The American species of trematode confused with *Bucephalus* (*Bucephalopsis*) *haimeanus*.” 44 (3/4), 353-370.
- g. HOY, J. M., 1954.—“The biology and host range of *Neoaplectana leucaniae*, a new species of insect-parasitic nematode.” 44 (3/4), 392-399.
- h. ELIAKIM, M. & DAVIES, A. M., 1954.—“The complement-fixation test in bilharziasis. I. The value of different extracts of *Schistosoma mansoni* and *Fasciola hepatica* worms as antigens.” 44 (3/4), 407-413.
- i. DINNIK, J. A., 1954.—“*Paramphistomum sukari* n.sp. from Kenya cattle and its intermediate host.” 44 (3/4), 414-421.
- j. LLEWELLYN, J., 1954.—“Observations on the food and the gut pigment of the Polyopisthocotylea (Trematoda: Monogenea).” 44 (3/4), 428-437.
- k. WERTHEIM, G., 1954.—“A new anoplocephalid cestode from the gerbil.” 44 (3/4), 446-449.
- l. CROFTON, H. D., 1954.—“Nematode parasite populations in sheep on lowland farms. I. Worm egg counts in ewes.” 44 (3/4), 465-477.

(291a) The authors have completed experimentally the life-history of *Paramphistomum microbothrium*, a common cattle parasite in Kenya. Miracidia hatched about the 14th to 16th day after oviposition when kept at a temperature of 26°C. to 28°C.; they invaded laboratory-bred *Bulinus alluaudi* and the earliest sporocysts were found eleven days after exposure. Daughter sporocysts did not develop and the rate of development of the rediae was very variable; sporocysts gave rise to four or more generations of rediae. Mature cercariae were first shed about the 43rd to 46th day after infection and the snails continued to shed cercariae throughout their life, in some cases for more than a year. Encysted metacercariae were fed to four cattle and four goats; the animals were killed at intervals of from 82 to 214 days after infection and the flukes collected. The number of flukes which developed in the cattle was proportionately much greater than the number developing in the goats. Eggs were first shed in the faeces 142 days after administration of experimentally obtained metacercariae but appeared 98 days after administration of metacercariae obtained from naturally infected snails.

S.W.

(291b) Moriya has made a statistical study of the efficiency of direct faecal smears compared with concentration techniques in the detection of helminth infections. He concludes that “On the assumption that the limit of significant difference is 1%, it is necessary, when concentration methods are not used, to repeat the faecal examination 3 times for the egg of *Ascaris lumbricoides*, 7 times for hook worm and 11 times for *Trichuris trichiura* in order to obtain the diagnostic results obtained by the acid-ether concentration technique using 3 g. of faeces”.

S.W.

(291c) Crofton discusses the methods of sampling pastures for infective nematode larvae. He finds trapping to be very inefficient and plucking to give more consistent results than grass cutting. He describes a flotation technique, using saturated zinc sulphate, for separating larvae from grass and soil which has an additional advantage in that it has the same effect on infective larvae as dehydration; consequently it lessens the number of larvae which must be carefully examined for identification. Neyman's views on the distribution of infective larvae are confirmed. The distribution of faeces and of grazing sheep on pastures have been studied and the author discusses their relationship to the distribution of larvae and their significance in the interpretation of results. The use and limitations of sampling pastures are reviewed.

S.W.

(291d) Fyfe describes and illustrates *Tricoryledonias genypteri* n.g., n.sp. from the stomach of *Genypterus blacodes* caught off the New Zealand coast. The new genus is characterized by the possession of a small pre-oral sucker, and two oval muscle pads which are laterally placed in the anterior part of the fore-body. It cannot be assigned to any of the subfamilies of the Hemiuridae as defined by Dawes in 1946 but if the classification of the subfamilies is based only on the vitellaria the new genus can be placed in the Sterrhurinae. s.w.

(291e) Kulasiri examined 407 *Rattus rattus* caught in Colombo. *Hymenolepis diminuta* was present in 6.63%, *H. nana* in only one rat and *Raillietina madagascariensis* in 2.95%; no mixed infections of *Hymenolepis* and *Raillietina* were found but *H. diminuta* and *Moniliformis dubius* did occur together. The author is of the opinion that the incidence of *H. diminuta* in man in Ceylon is probably much higher than has been detected. *H. nana* and *R. madagascariensis* have not been reported in man in Ceylon. s.w.

(291f) Hopkins has examined the bucephalid cercaria from the American commercial oyster, *Crassostrea virginica*, and established that it is *Bucephalus cuculus* McGrady, 1874, not *Bucephalus haimeanus*, the parasite of the European oyster, *Ostrea edulis*. He redescribes and illustrates from mature specimens *Rhipidocotyle transversale* from *Strongylura marina*. He also describes and figures *Rhipidocotyle lintoni* n.sp. and *Bucephaloides strongyluræ* n.sp. from *S. marina*, and *R. lepisostei* n.sp. from *Lepisosteus spatula*. It is possible that *R. lepisostei* may prove to be the adult of *Bucephalus cuculus*. s.w.

(291g) Hoy found 26 larvae of a small tussock moth (*Crambus simplex*), which were dead or dying, to be infected with *Neoaplectana leucaniae* n.sp. Males and pre-adult and gravid females are described and illustrated and the life-cycle has been followed experimentally. Three larval stages occur, two regularly and the third or dauerlarva when the environmental conditions are adverse. *N. leucaniae* could be cultured successfully on a veal pulp medium and the infectivity of the larvae was not lessened after *in vitro* culture for ten generations. The larvae were able to infect a number of different Melolonthinae larvae but as *N. leucaniae* did not persist in the soil it shows little promise in the biological control of insect pests. s.w.

(291h) Eliakim & Davies prepared seven extracts of both *Schistosoma mansoni* and *Fasciola hepatica* using Coca's solution, alcohol and ether, acetone, and formamide and tested them for complement fixation with sera from 48 proven chronic cases of schistosomiasis. Of these 24 had received no treatment. Sera from 60 uninfected European immigrants were used as controls. The extracts of *S. mansoni* varied in sensitivity and specificity, that in Coca's solution being the most specific, and the alcohol-ether, and the absolute alcohol extract of the residue from acetone extraction being the two most sensitive. Neither the acetone extract nor the formamide extract (polysaccharide) showed any activity. Although the *F. hepatica* extracts reacted similarly the titres were too low for use in C.F.Ts. The authors suggest that the antigen is either lipo-protein or that more than one substance is involved. They recommend the extract in Coca's solution for clinical diagnosis. s.w.

(291i) Dinnik describes and figures *Paramphistomum sukari* n.sp. from the reticulum of cattle in Kenya. The new species resembles *P. microbothrium* and *P. clavula* but can be distinguished from them by the testes, which have only five to eight lobes, and by the absence of the second part of the dorsal external circular muscles in the acetabulum. *Biomphalaria Pfeifferi* were found naturally infected and the morphology of the larval stages in experimentally infected snails is described in detail. s.w.

(291j) Llewellyn has shown by histochemical methods and using a Hartridge reversion spectroscopy fitted to a microscope that eight species of the Polyopisthocotylea feed mainly on the blood of their hosts. The species studied included *Polystoma integerrimum*, *Axine belones*, *Discocotyle sagittata* and two species of *Diclidophora*, parasites of marine and freshwater fish and of amphibians being represented. The blood is haemolysed fairly rapidly in

the gut and this is followed by phagocytosis by the amoeboid epithelial cells, the globin fraction of the haemoglobin forming the chief nutriment. Haematin remained unaltered and was eliminated either by being discharged by the epithelial cells or by the sloughing off of intact cells. There was no evidence of increase in the deposition of pigment with age; a number of large, mature specimens of *Diclidophora merlangi* were observed without pigment and this absence of pigment is attributed to its having been defaecated. S.W.

(291k) Wertheim describes and illustrates *Rajotaenia gerbilli* n.g., n.sp. from *Gerbillus pyramidum* caught near Tel Aviv. The new cestode is short and almost triangular in shape and the whole strobila consists of only three or four proglottides. The scolex is inconspicuous, rests on a depression in the anterior margin of the first proglottis, has no rostellum and bears four unarmed suckers; the neck is wider than the scolex and contains genital rudiments; the lateral margins of the proglottides are longer than their midlines; the genital pores alternate regularly and the genitalia are well developed in the second proglottis; there is no cirrus sac or other accessory organ in the male genitalia and the vagina is a simple straight tube; the last proglottis is gravid and very easily detached. No eggs were found in the faeces of infected animals and relatively few of the gravid proglottides contained eggs with fully developed onchospheres. S.W.

(291l) Crofton has studied seasonal fluctuations of nematode egg counts in the ewes of three flocks of lowland sheep during the years 1950-53. Two peaks were evident each year; one in spring corresponded with the spring rise in hill sheep reported by Morgan *et al.* and the second in late summer is attributed to the drop in volume of faeces immediately after weaning. The spring rise was of short duration in each ewe and appears to be directly related to the time of lambing. *Ostertagia* spp. were most numerous in the spring and contributed more to the spring rise than any of the other species, the highest numbers of *Trichostrongylus axei* occurred during the spring and summer rises but in the summer it was less numerous than other species of *Trichostrongylus*, *T. vitrinus* was the predominant species in winter, *Cooperia* spp. occurred rarely, *Nematodirus* ova were rarely seen after August in any year and *Strongyloides papillosus* occurred sporadically throughout the year but was most numerous in the autumn. S.W.

292—Philippine Journal of Animal Industry.

- a. REFUERZO, P. G., ALBIS-JIMENEZ, F. & CERNA, G. DE LA, 1954.—“Studies on *Neoscaris vitulorum* (Goeze, 1782). I. Observations on the morphology of the ova and on their development to the infective stage. With notes on feeding experiments.” Year 1952, 13 (1/4), 15-23.
- b. REFUERZO, P. G., 1954.—“Prenatal infection of a calf with *Setaria cervi* (Rudolphi, 1819) (Nematoda: Filariidae).” Year 1952, 13 (1/4), 91-92.

(292a) Eggs of *Neoscaris vitulorum* are normally oval with a thick pitted shell and measure from 68.4μ to 90.0μ by 61.2μ to 79.2μ . They are unsegmented when deposited. After six days at a temperature of 27°C . the embryo outline is visible in the egg. Embryonation is complete by the ninth day. Ecdysis occurs between 13 and 15 days and the egg is then infective. Guinea-pigs were orally infected with ripe ova and in six and twenty-four hours larvae, which measured 417.6μ by 18μ , were recovered from the liver and lungs respectively. After 14 days the larvae which were recovered from the lungs measured 496.8μ by 21.6μ . Larvae recovered from the lungs of a calf 14 days after infection were morphologically similar to those in the guinea-pig, except that they averaged 522μ by 21.6μ in size. The pathological changes in the liver and lungs and the morphological details of the organism are recorded. D.M.

(292b) This is the first recorded case of prenatal infection of a calf with *Setaria cervi*. Two live immature females were recovered from the peritoneal cavity, but no similar parasites were found in the dam. The effect of the parasite on the host appears to be a matter of controversy. D.M.

293—Phytopathology.

- †a. HORN, N. L. & MARTIN, W. J., 1954.—“Plant parasitic nematodes in relation to strawberry culture in Louisiana.” 44 (9), 493.
- †b. LEAR, B., MAI, W. F., HARRISON, M. B. & CUNNINGHAM, H. S., 1954.—“Yields and off-flavor of potatoes and carrots grown on plots receiving annual soil treatments.” 44 (9), 496.
- †c. LINFORD, M. B., 1954.—“Pathogenicity tests with the clover-root nematode.” 44 (9), 496.
- †d. LOWNSBERY, B. F. & PETERS, B. G., 1954.—“The relation of the tobacco cyst nematode to tobacco growth.” 44 (9), 497.
- †e. LUCAS, G. B., SASSER, J. N. & KELMAN, A., 1954.—“The effect of root-knot nematodes on the expression of granville wilt resistance in tobacco.” 44 (9), 497.
- †f. MAI, W. F., 1954.—“Changes in the viable golden nematode population of the soil while growing potatoes every year.” 44 (9), 497.
- †g. TARJAN, A. C., 1954.—“Nematicidal trends in some hydroxybenzenes.” 44 (9), 507-508.
- h. CHAPMAN, R. A., 1954.—“Meadow nematodes associated with failure of spring-sown alfalfa.” 44 (9), 542-545.
- i. MUNNECKE, D. E. & LINDGREN, D. L., 1954.—“Chemical measurements of methyl bromide concentration in relation to kill of fungi and nematodes in nursery soil.” 44 (10), 605-606.

(293a) *Tylenchorhynchus* sp., *T. claytoni* and *Meloidogyne hapla* bred in the roots of “Klonmore” strawberry in Louisiana the last causing severe root damage. *Helicotylenchus* sp., *Pratylenchus* sp. and *Trichodorus* sp. were also present in the area. Ethylene dibromide reduced populations of all the nematodes but this only showed as increased yield where *M. hapla* was the parasite. J.B.G.

(293b) Testing 17 chemicals in 40 treatments for effects on yield and tainting in potatoes and carrots, Lear and co-workers gave the equivalent of a 10-year dosage in one dose, and also 1-year dosages repeated annually for three years, all treatments being given in the autumn. Zinc trichlorophenate 32% (Dow 9B) at 100 lb. caused a yield reduction in the first two 1-year dosages, and at the 10-year dosage (1,000 lb.) this reduction persisted for two years. The 500 lb. dosages of D-D mixture, Dowfume N, and dichlorobutenes caused a reduction in both crops, persisting for one year. Taint occurred only with D-D and Dowfume N. B.G.P.

(293c) Linford grew white clover in non-sterile and in steam-sterilized soil, with and without the addition of 25 washed, non-desiccated cysts of *Heterodera schachtii* var. *trifolii* per 6-in. pot, and took fresh weights of the tops harvested during 14 months. In the controls he found the yield slightly but insignificantly higher in non-sterile than in sterilized soil, while in infested soils the yields in non-sterilized were 28.4% of the controls and in sterilized soil 6.2% of the controls. He says that the reduced severity of the disease in non-sterile soil appears to result from partial biological control of nematodes by organisms destroyed in sterilized soil. Ladino clover was highly susceptible to *H. schachtii* var. *trifolii* in sterilized soil but growth of red clover was not affected. M.T.F.

(293d) By growing tobacco plants in pots of soil artificially infested with *Heterodera tabacum* at a range of densities between 50 and 3,200 larvae per gm. of soil, Lownsbery & Peters show that heights and final weights of plants were inversely proportional to log density. Thus every 10-fold increase in density led to a weight loss of 139 gm. in normally fertilized plants. The highest density to maintain itself over the experiment was about 1,000 larvae per gm. In a field experiment in which the natural density had been reduced on some plots by prior injection of D-D mixture, a broadly similar relation between height and log density was found, but here the D-D led to other complicating effects such as an increase in ammonia nitrogen at the expense of nitrate nitrogen. B.G.P.

(293e) Seedlings of the tobacco variety, Dixie Bright 101, which is moderately resistant to Granville wilt, were grown in the green-house in pots of steamed soil inoculated with either (i) 50 ml. of a suspension of *Pseudomonas solanacearum*, (ii) about 100 gm. of soil infested

† Abstract of paper presented at the 46th Annual Meeting of the American Phytopathological Society Estes Park, Colo., August 25-27, 1954.

with eggs and larvae of *Meloidogyne incognita* var. *acrita*, or (iii) both organisms. After seven days 5% of plants in treatment (i) showed wilt symptoms, none in treatment (ii) and 90% in treatment (iii). After 22 days the deaths in treatment (i) were 10%, in (iii) were 100%, while in (ii) there were no above-ground symptoms of disease. These and other results from similar experiments indicate that the severity of Granville wilt is increased in wilt-resistant tobacco growing in soils infested with both *M. incognita* var. *acrita* and *P. solanacearum*. M.T.F.

(293f) On six experimental areas on Long Island, Mai has estimated the population of viable cysts of *Heterodera rostochiensis*, before and after a potato crop, in each of two warm and dry growing seasons, 1952 and 1953. In nine cases the population was reduced and in three increased, the "after/before" ratios varying from 0.13 to 7.2. In a given area the percentage decrease was proportional to the pre-cropping viable cyst count. B.G.P.

(293g) Tarjan has investigated the nematicidal effects of several hydroxybenzenes, distinguishing (i) contact effects, measured by using *Panagrellus redivivus*, (ii) ovicidal effects, using egg masses of *Meloidogyne incognita*, and (iii) therapeutic effects on tomato plants infested by *M. incognita*. The efficacy of various mono-, di-, and trihydroxybenzenes is in general dependent on the type of substituted radical and its position in the benzene ring. Thus, in hydroxybenzoic acid the *ortho* position is inferior as an ovicide to either *meta* or *para*. That substituted nitro groups may be useful is indicated by the high contact activity of 2,4,6-trinitro resorcinol. A number of relatively ineffective compounds are mentioned. B.G.P.

(293h) *Pratylenchus* spp. caused serious root damage to spring-sown lucerne under winter wheat, resulting in a very poor stand. An average of about 20,000 eelworms per gm. of fresh root were found. Autumn-sown lucerne after summer fallow gave an excellent stand and only about 30 eelworms per gm. of fresh root. Long-lived stands of lucerne are rare in Kentucky and it is suggested that the establishment of large populations of *Pratylenchus* may have some bearing on this situation. J.B.G.

(293i) The authors tested methyl bromide as a fumigant applied to a stack of 225 flats of soil covered with plastic sheeting. At three levels in the stack test inocula of fungi and other root-knot nematodes, in the form of root galls and infested soil, were buried in plastic screening bags. The soil temperature was 67°F.-70°F. and moisture was normal for seeding. The gas, at the rate of 4 lb. per 100 cu. ft., was released at the top of the stack which was left covered for 24 hours. At different times samples of gas were drawn from top, middle and bottom of the stack for estimation of methyl bromide concentration. The gas diffused rapidly, but after 3-4 hours the concentration was only 1.5 lb. per 100 cu. ft. due to sorption on the soil. Thereafter the concentration decreased gradually, apparently chiefly by leakage at the edges of the cover. The root-knot nematodes were all killed. M.T.F.

294—Plant Disease Reporter.

- a. GOOD, Jr., J. M., ROBERTSON, W. K. & THOMPSON, Jr., L. G., 1954.—"Effect on crop rotation on the populations of meadow nematode, *Pratylenchus leiocephalus*, in Norfolk loamy fine sand." 38 (3), 173-180.
- b. JENSEN, H. J. & CAVENESS, F. E., 1954.—"Hot water and systox for control of foliar nematodes in Bellingham hybrid lilies." 38 (3), 181-184.
- c. HUTCHINSON, S. A. & MAI, W. F., 1954.—"A study of the efficiency of the catching organs of *Dactylaria eudemata* (Drechs.) in relation to *Heterodera rostochiensis* (Wt.) in soil." 38 (3), 185-186.
- d. RAEDER, J. M., 1954.—"A note on the longevity of the wheat nematode, *Anguina tritici* Steinbuch." 38 (4), 268-269.
- e. GOHEEN, A. C., 1954.—"Meadow nematodes on raspberries and blackberries." 38 (5), 340-341.
- f. TROLL, J. & TARJAN, A. C., 1954.—"Widespread occurrence of root parasitic nematodes in golf course greens in Rhode Island." 38 (5), 342-344.
- g. JENSEN, H. J. & PAGE, G. E., 1954.—"An experimental blade-type soil fumigant applicator." 38 (6), 401-402.

- h. YOUNG, R. A., 1954.—“Dissemination of plant pathogens on nursery and ornamental plants.” 38 (6), 417-420.
- i. BUHRER, E. M., 1954.—“Common names of some important plant pathogenic nematodes.” 38 (8), 535-541.
- j. HOPPER, B. E. & TARJAN, A. C., 1954.—“Chlorophenyl methyl rhodanine: its mode of action against root knot nematode infections.” 38 (8), 542-544.
- k. MAI, W. F., 1954.—“Toxicity of fungal and bacterial filtrates to encysted golden nematode larvae.” 38 (8), 545-546.
- l. JENSEN, H. J., CAVENESS, F. E. & MULVEY, R. H., 1954.—“A modification of Thorne's technique for examining soil diffusion patterns of nematocides.” 38 (9), 680-686.
- m. SHER, S. A., 1954.—“Observations on plant-parasitic nematodes in Hawaii.” 38 (9), 687-689.

(294a) Crop rotation had an effect on the soil population level of *Pratylenchus leiocephalus* in Florida. Continuous maize gave the highest numbers but these diminished when peanuts were in the rotation. Alternate maize and peanuts gave the lowest populations, slightly higher ones were present when the rotation was two years maize and one year peanuts. Lupins also increased the populations although not so much as oats or natural cover. J.B.G.

(294b) *Aphelenchoides fragariae* in hybrid lilies was successfully controlled by treatment in a hot-water-formaldehyde bath at 44°C. for one hour, or by two or three foliar sprays of 42% Systox at a dilution of 1:400. The lilies suffered no apparent injury. J.B.G.

(294c) *Dactylaria eudermata*, a nematode-trapping fungus, was shown to be quite inefficient both in its ability to capture nematodes from a mixed population or *Heterodera rostochiensis* larvae, and in its ability to control them over a period of time. Experiments were carried out on agar plates to which sterilized soil was added in some cases. It is concluded that for this species at least, little can be expected from it in controlling nematodes in the field. J.B.G.

(294d) Larvae of *Anguina tritici* were found to be viable after storage of wheat nematode galls for 15 years on a laboratory shelf. They were still capable of infesting wheat plants. J.B.G.

(294e) Undetermined species of *Pratylenchus* were found in the roots of species and varieties of *Rubus* (raspberries and blackberries) from North Carolina and Maryland. In some cases quite high numbers were found per gramme of root. J.B.G.

(294f) A survey of golf-links greens showing patchiness or chlorotic areas revealed the presence of numerous nematodes which have been divided into (i) known plant parasites (ii) suspected plant parasites, and (iii) non-parasitic. J.B.G.

(294g) Jensen & Page describe an experimental blade-type applicator for applying nematicides to soil. It is designed to apply the chemical in a continuous sheet at a depth of 6-7 inches by means of a spray-boom below the blade. A gear-driven pump attached to the power take-off of the tractor forces the material under pressure through the spray-boom. M.T.F.

(294h) Amongst other examples of plant pathogens Young cites *Pratylenchus* spp. as being easily disseminated in the roots of nursery stock. M.T.F.

(294i) Buhrer has compiled a list of plant-parasitic nematodes with their common names, and the names of the diseases with which they are associated, with the object of helping towards the standardization of the common names and the lessening of confusion in this field. She gives a list of criteria recommended for use in selecting or inventing common names of nematode pathogens. These, which should be applied in the order given, are: (i) old,

established and wide usage (e.g. sugar-beet nematode); (ii) morphological characters of the nematode if feasible (e.g. ring nematodes); (iii) description of the disease produced, especially when symptoms are the same in many hosts (e.g. stubby-root nematode); (iv) translation of the generic or specific name; (v) commonest host; (vi) geographical location. M.T.F.

(294j) Hopper & Tarjan report the results of experiments carried out to discover the mode of action of a new chemical 3-*p*-chlorophenyl-5-methyl rhodanine (N-244) against root-knot infestation of tomatoes. The chemical was applied to tomato plants growing in 4-inch pots two weeks after they had each been inoculated with five egg masses of *Meloidogyne incognita*. The N-244 was dissolved in acetone, prepared in aqueous emulsion with Triton X-100 and applied as a soil drench at 3 gm. per sq. ft. A second group of plants was treated with Heptachlor (1,4,5,6,7,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene) made up with the same solvent and emulsifier and applied at 2.5 gm. per sq. ft. Plants were removed for examination at frequent intervals over a period of seven weeks. N-244 proved an effective means of eradicating the infestation; it killed the secondary roots and the contained nematodes but the tap root survived and put out new secondaries which remained free from infestation. Heptachlor seemed to be ovicidal but did not kill nematodes already within the roots. M.T.F.

(294k) Batches of cysts of the potato root nematode (*Heterodera rostochiensis*) were immersed for 10 or 30 minutes in filtrates of 22 different bacteria or fungi after they had been grown for 30 days on a dextrose nutrient broth. Two dilutions of each filtrate were used, namely 1:9 and 1:99. The cysts were then washed and placed in potato root leachings at 75°F. for two weeks. Larvae hatched normally from all batches indicating that none of the micro-organisms used had any lethal effect under the conditions of the experiment. M.T.F.

(294l) Jensen *et al.* describe an experiment designed to test the diffusion patterns of ten nematicides applied in the field to soil infested with *Pratylenchus penetrans*. The materials were applied in both spot and bar type injections at a standard dosage of 1 c.c. and the soil lightly packed around the injection point. Eight columns of soil, each 14 inches by 1 inch, were taken from points at 2-inch intervals, four on each side of the injection point, and each column was divided into seven 2-inch sections. The two corresponding samples from each side of the injection point were combined making a total of 28 samples of about 50 gm. each. Seeds of *Vicia villosa* Roth. were grown for three months in the samples and the *P. penetrans* in the roots were then extracted and counted. The data are presented in charts. Most materials were shown to be ineffective below the plough sole, and in the topmost 2 inches of soil only chlorobromopropene in bar type and ethylisothiocyanate in spot and bar type injections appeared to be lethal. The bar type of injection increased the diffusion pattern over that resulting from spot injection only in the case of chlorobromopropene. The technique described can be used to compare the efficiency in the control of nematodes shown by different nematicides only if the injections are replicated and comparable doses are used. M.T.F.

(294m) Sher lists a number of plant-parasitic nematodes and their hosts found in the Territory of Hawaii. Reported from Hawaii for the first time are the nematodes *Aphelenchoides fragariae*, *Tylenchulus semi-penetrans* and *Trichodorus* sp. Ten plant species and five crosses of Vanda orchids are recorded as new hosts of *Aphelenchoides besseyi*. *A. fragariae* is recorded for the first time as a parasite of *Vanda* × miss joaquim, *Pentas lanceolata*, *Impatiens balsamina* and *Ageratum coryzoides*. *Arctium lappa* is recorded for the first time to be parasitized by *Criconeumoides mutabile* and *Hoplolaimus* sp., the latter also parasitizing croton (*Codiaeum*) and banana. Other first records are *Pratylenchus brachyurus* on Easter lily, *Radopholus similis* on *Anthurium andraeanum* and *Strelitzia*, and *Radopholus* sp. on *Nelumbium nelumbo*. M.T.F.

295—Plant Diseases: Reporter. Supplement.

- a. CAIRNS, E. J., 1954.—"Plant nematology: science or service?" No. 227, pp. 75-76.
- b. HOLDEMAN, Q. L., 1954.—"Nematodes as possible members of disease complexes involving other plant pathogens." No. 227, pp. 77-79.
- c. GRAHAM, T. W., 1954.—"Recent developments with ectoparasitic nematodes." No. 227, p. 80.
- d. HOLDEMAN, Q. L., 1954.—"Value of greenhouse tests in evaluating the host range of nematodes." No. 227, pp. 81-82.
- e. GRAHAM, T. W., 1954.—"Plant abnormalities caused by parasitic nematodes." No. 227, p. 83.
- f. IVANOFF, S. S., 1954.—"Hyperplastic abnormalities of roots of oats and other cereals and grasses suspected to be caused by nematodes." No. 227, pp. 84-85.
- g. MARTIN, W. J., 1954.—"Parasitic races of *Meloidogyne incognita* and *M. incognita* var. *acrita*." No. 227, pp. 86-88.
- h. GRAHAM, T. W., 1954.—"Problems in breeding for resistance to nematodes in tobacco." No. 227, p. 89.
- i. SMITH, A. L., 1954.—"Problems on breeding cotton for resistance to nematodes." No. 227, pp. 90-91.
- j. CORDNER, H. B., STRUBLE, F. B. & MORRISON, L., 1954.—"Breeding sweet potatoes for resistance to the root-knot nematode." No. 227, pp. 92-93.
- k. SMITH, A. L., 1954.—"Fumigation: theory and practice." No. 227, p. 94.
- l. McBETH, C. W., 1954.—"Some practical aspects of soil fumigation." No. 227, pp. 95-97.
- m. DIETER, C. E., 1954.—"Factors affecting results with soil fumigants." No. 227, pp. 98-101.
- n. MACHMER, J. H., 1954.—"The nematode complex in southern Georgia." No. 227, pp. 102-107.

(295a) Cairns states that the phytonematologist is faced with the problem of whether to devote his time to service or research. Requests for service are increasing but more and more research is needed to form the scientific basis for advisory work. He suggests that the nematologist could get more time for research if those who send samples for investigation would take care to see that they are representative and that they arrive in good condition, and if more people were trained to examine material and identify nematodes for themselves.

M.T.F.

(295b) Holdeman reviews our present knowledge of the association of plant-parasitic nematodes and fungi in fusarium wilt disease of cotton, tomato and tobacco, in black shank, stem and root rots of tobacco, in *Dilophospora* disease of wheat and in root rots of other plants. Nematodes have also been associated with deficiency diseases and possibly with *Corynebacterium tritici* in wheat.

M.T.F.

(295c) The importance of root-browsing nematodes has only recently been recognized. Trends of present work are indicated.

J.B.G.

(295d) Holdeman lists some of the factors to be considered in evaluating the results of green-house tests used in determining the host ranges of parasitic nematodes. Parasites of the nematodes may interfere with the test: the length of the test, temperature, rate of seeding and the variety of plant are other important factors.

M.T.F.

(295e) Stunting, unthriftness and slow decline are the commonest symptoms of nematode attack. Signs on the roots vary for different nematodes; meadow nematodes usually produce lesions followed by rot, the stubby root nematode does most damage to seedlings, spiral and sting nematodes cause damage similar to that caused by meadow nematodes and the tobacco stunt nematode, *Tylenchorhynchus claytoni*, causes the roots to remain short and in a dense mass.

J.B.G.

(295f) Ivanoff describes slight swellings, stubby terminal roots, tufts of secondary roots, with stunting and decay, seen in oats, barley, wheat and grasses in Mississippi. No nematodes were found in the roots. In soil around the oats large numbers of *Panagrolaimus rigidus* and some *Dorylaimus* sp. were found. The cause of the abnormalities is not clear.

M.T.F.

(295g) Martin tested two isolates of *Meloidogyne incognita* and two of *M. incognita* var. *acrita* with seven varieties of cotton, having previously shown [for abstract see Helm. Abs., 22, No. 122h] that certain isolates of both species may fail to reproduce on Deltapine 15 cotton. The plants were rated for degree of galling and significant differences between varieties occurred with each of the isolates tested. In one variety, A.H.A. 6-1-4, one isolate of *M. incognita* var. *acrita* (19S) produced significantly less galling than the other and than the two *M. incognita* isolates. The mean number of egg masses per plant differed significantly for the different isolates on Deltapine 15 and Delfos 425, being lowest again for the isolate 19S, while within three of the isolates the numbers on the different cotton varieties differed significantly, the lowest in each case being on variety Cleve wilt No. 3. M.T.F.

(295h) Graham mentions some of the difficulties in breeding a tobacco resistant to root-knot nematodes and says that there are now advanced lines which show some promise of stabilized resistance. M.T.F.

(295i) Nematodes of the genera *Pratylenchus*, *Meloidogyne*, *Trichodorus* and *Belonolaimus* attack the roots of cotton and provide an opening for the wilt fungus. The loss from fusarium wilt may therefore be attributed indirectly to nematodes, while nematodes also cause direct loss. The root-knot nematode is the most important, hence the search for root-knot resistance. The most promising material is a wild cotton, *Gossypium barbadense* var. *darwinii*, in which root-knot resistance appears to be inherited recessively. It will take much time to transfer the resistance to an upland cotton. M.T.F.

(295j) In a short summary of the results of work on breeding sweet-potatoes resistant to root-knot nematode at the Oklahoma Agricultural Experiment Station, the authors state that the progeny from crosses of two resistant parents show about 50% resistant seedlings, 30% intermediate and 20% susceptible. In crosses between a resistant and a susceptible parent the progeny are about equally distributed in the three groups, while crosses between two susceptible parents give about 10% resistant, 25% intermediate and 65% susceptible offspring. Tests have confirmed that the Jersey varieties are resistant, Porto Rico types intermediate and Nancy Hall susceptible. Other resistant varieties are Heartgold, Nemagold and B5999, B5941 and E7. Allgold, Redgold, Earlyport, Vates Golden and Virginia are susceptible. M.T.F.

(295k) This consists of a few general comments on the use of fumigants in the control of eelworms in cotton and tobacco. J.B.G.

(295l) McBeth gives a general account of the practical use of nematicides in treating soil. Difficulties of mixing favour the volatile fumigant of high vapour pressure, dispersing in the vapour phase. As to temperature, fumigants boiling between 150°C. and 200°C. are most effective at soil temperatures of 27°C. or more. D-D mixture (b.p. 130°C.) will diffuse 6 in. through a sandy soil in less than 24 hours at 75°F., but 96 hours are needed at 45°F. As to soil moisture, in sands, loams and clay-loams, this should lie between 50% and 85% of moisture equivalent (field capacity). As to soil type, heavy clays and all soils with a moisture equivalent approaching 30% are unsuitable for fumigants, as also are peat soils, probably owing to sorption. Of several new fumigants, the only one superior to D-D or to ethylene dibromide is Shell O.S.1897, with ten times the efficacy of D-D and of low phytotoxicity: it appears to act as a slow poison. It has proved effective against cyst nematodes at 2.5 to 5.0 U.S. gal. per acre, and in row applications against root-knot at 0.5 to 1.0 gal. per acre. For field application at low rates, a constant head tank delivering through a coil of saran tubing can be used: the rate of flow is inversely proportional to the length of the tubing. For closely planted and also for perennial crops (before planting), a "solid" or "all-over" application is recommended: for widely-spaced crops, injection can be confined to the site of the row or even to the actual planting site, with corresponding economy of fumigant. B.G.P.

(295m) In discussing the factors affecting results with nematicidal soil fumigants, Dieter necessarily covers a number of the points dealt with in the previous paper, viz., soil temperature, moisture, type and tilth. He adds that for treating highly organic soils, high soil moisture (100% to 200% on a dry soil basis) is essential, probably to satisfy the high sorptive capacity. Assessment of results based on plant growth and yield can be misleading since side effects like phytotoxicity or changed plant nutrition, through an induced excess of ammonia-nitrogen, may be superimposed on the main nematicidal effect. He makes it clear that a large number of physical, chemical and biological properties of fumigants, soils and crops contribute to successful fumigation. B.G.P.

(295n) By the means of five tables, the problems encountered by the nematologist in south Georgia are illustrated. Machmer claims that the Baermann funnel technique can be used to evaluate the nematode complex associated with roots of diseased plants. J.B.G.

296—Praktische Tierarzt (Der).

- a. HOLZ, J. & HÖRNING, B., 1954.—“Über die wirtschaftl. Bedeutung des Spulwurms *Ascaris ovis* Rudolphi.” Year 1954, No. 3, p. 61.

(296a) From the small intestine of a sheep bred in Schleswig-Holstein, the authors report an 8 cm. long yellowish-white roundworm with a finely annulated cuticle. There are two denticulate lips, the dorsal with two papillae while the ventral has on each subventral one large double and two small single papillae. The ventrally bent tail is flattened 1 cm. from the cloaca, with about 50 thin papillae on either side. The seminal vesicle is 20 mm. long and 0.7 mm. in cross section. The spicules are 1 mm. long. From their own findings and from previous literature (which is listed) on “*Ascaris ovis*” the authors point out that all known *A. ovis* were sexually immature adults of *A. lumbricoides* which can, under certain circumstances, develop in sheep without producing eggs or being a source of infection. Thus it is concluded that the independent species *A. ovis* Rudolphi, 1819 does not exist. G.I.P.

297—Proceedings of the American Veterinary Medical Association.

- a. BAILEY, W. S., 1954.—“New developments in the control and treatment of parasites in large animals.” 90th Annual Meeting (1953), pp. 52-55.
- b. GRAHAM, G. L., 1954.—“New developments in the control and treatment of parasites in small animals.” 90th Annual Meeting (1953), pp. 55-58.
- c. CHILDS, T., 1954.—“Some aspects of trichinosis control.” 90th Annual Meeting (1953), pp. 451-454. [Discussion pp. 454-456.]

298—Proceedings. Association of Southern Agricultural Workers.

- a. VEGORS, H. H., SELL, O. E., BAIRD, D. M. & STEWART, T. B., 1954.—“Internal parasitism of fall-dropped and spring-dropped calves on three types of winter pasture.” [Abstract.] 51st Annual Convention (1954), pp. 74-75.
- b. JOHNSTONE, Jr., F. E. & RAYNOLDS, R. B., 1954.—“Field experiments on control of rootknot and weeds with soil fumigants.” [Abstract.] 51st Annual Convention (1954), pp. 127-128.
- c. BIRCHFIELD, W., 1954.—“The reproduction of *Tylenchorhynchus* sp. from sugarcane soils on different plants.” [Abstract.] 51st Annual Convention (1954), pp. 152-153.
- d. GRAHAM, T. W., 1954.—“The tobacco stunt nematode in South Carolina.” [Abstract.] 51st Annual Convention (1954), p. 153.
- e. SMITH, A. L., 1954.—“Resistance to *Fusarium* wilt and root-knot nematode in upland cotton varieties.” [Abstract.] 51st Annual Convention (1954), p. 153.
- f. MARTIN, W. J., 1954.—“Propagation of certain plant parasitic nematodes from hand-picked specimens.” [Abstract.] 51st Annual Convention (1954), pp. 153-154.

(298a) The autumn Hereford calves 10½ and 11½ months old and spring Hereford calves 8½ months old were kept near Eatonton, Georgia, U.S.A. on identical winter pastures, viz., (i) temporary rye grass, oats and crimson clover, (ii) fescue and white clover and (iii) crimson clover. At autopsy those on fescue pastures had heavier worm burdens or showed more harmful effects of parasitism than the calves on the temporary or crimson clover

pastures and the spring calves, as a group, had two to three times as many worms as the autumn calves. The principal species were *Ostertagia ostertagi*, *Trichostrongylus axei*, *T. colubriformis*, *Cooperia punctata* and *C. oncophora*. Although the spring calves on crimson clover had a much higher worm burden than those on fescue, the latter made much poorer gains and showed stomach lesions due to severe parasitism. The autumn calves on fescue also showed a moderate pathology due to parasitism. The autumn and the spring calves on crimson clover and on temporary pastures showed no clinical signs regardless of the size of the worm burden. The harmful effect of heavy parasitism was apparently checked by the high nutritional quality of the temporary and crimson clover forages. The average number of larvae per pound of green forage was 415 on fescue, 48 on crimson clover and 28 on temporary pastures. In the following year the averages from the same pastures were 38, 17 and 1 respectively. During March, April and early May when the recovery of larvae was high the average daily temperatures were from 50°F. to 67°F. R.T.L.

(298b) Plots in a field badly infested with Johnson grass, Bermuda grass, nutgrass and other weeds and in which tomato plants had died during the previous year from root-knot, fusarium wilt and southern blight were treated with methyl bromide (Dowfume MC2) at the rates of $\frac{1}{2}$ lb., 1 lb. and 2 lb. per 100 sq. ft. Control of root-knot in all three experiments was almost perfect and almost all of the tomato plants survived and were healthy. The only surviving weeds were a few *Cassia tora*, *Ipomoea purpurea* and *Mollugo verticillata*. The control of the grasses was especially striking. R.T.L.

(298c) A fixed number of an unnamed species of *Tylenchorhynchus*, previously reported as the cause of a stubby and depleted root system of sugar cane, was inoculated into sterilized soil in which various species of plants were grown. Estimates of the nematode populations were made about 110 days later and showed that Johnson grass and rice were very suitable hosts. Pelican and Acadian soya beans and Unit I Porto Rico sweet-potato were fairly good. Easter lily was of doubtful importance and there was no reproduction on Deltapine 15 cotton, White Tuxpan field corn, and common Ligustrum. R.T.L.

(298d) [This abstract also appears in *Phytopathology*, 1954, 44, 332. For abstract see *Helm. Abs.*, 23, No. 155a.]

(298e) [This abstract also appears in *Phytopathology*, 1954, 44, 333. For abstract see *Helm. Abs.*, 23, No. 155b.]

(298f) It is comparatively easy to obtain and maintain cultures containing only one species of plant-parasitic nematode by handpicking individual specimens of plant-parasitic nematodes from a water suspension of infested soil and, after microscopical verification, pouring them into pots of sterilized soil planted with a suitable host plant. By this method Martin has propagated one population each of *Trichodorus*, *Rotylenchus* and *Pratylenchus* and two populations of *Tylenchorhynchus*, from 15 to 50 handpicked specimens to 20,000 or more within 12 to 15 weeks. R.T.L.

299—Proceedings of the Ceylon Association for the Advancement of Science.

- a. COORAY, G. H. & PANABOKKE, R. G., 1954.—“Extra-intestinal ascariasis with special reference to peritoneal reactions caused by ova.” [Abstract.] 10th Annual Session, Part 1, p. ?.
- b. SENEVIRATNE, P., 1954.—“Some aspects of helminth infestations in domestic animals in Ceylon.” [Abstract.] 10th Annual Session, Part 1, pp. 6-7.

(299a) Cooray & Panabokke report on five cases of extra-intestinal ascariasis in Ceylonese children. In one case the adult *Ascaris* was found in the bile-ducts, causing cholangitic abscesses, in the other four cases peritoneal lesions were caused by ova. In three of the peritoneal cases ova had escaped into the peritoneal cavity through a perforation in the appendix, while in the fourth ova were found in a congenital hernial sac and the mode of exit from the intestine was not obvious. The peritoneal reactions were chiefly granulomatous, and the authors emphasize

the fact that granulomatous reactions in peritoneal tissue due to escape of *Ascaris* ova may not be so infrequent in countries like Ceylon where *Ascaris* infestation is heavy and conditions liable to cause intestinal perforation common. In an attempt to answer the question of the possibility of auto-infestation from ova in extra-intestinal sites, the authors introduced a suspension of *Ascaris* ova into the peritoneal cavity of a series of rats, and they report on the results of this experiment. Intense cellular response, seen chiefly in the omentum, destroyed the ova or segregated them in tubercle-like nodules as in human cases. No further development of the ova took place in the omentum, but certain structural changes occurred in liver and lungs, probably due to disintegration products of ova. It is possible that, where infestation is heavy, such changes take place in human tissues also and are accompanied by clinical manifestations. H.C.

(299b) Seneviratne reports that in a preliminary survey 95% of the cattle, goats, pigs and poultry slaughtered at the Kandy slaughterhouse were found to harbour helminth parasites. 30% of the infestations were of clinical significance and the rest heavy enough to be of economic importance. Over 90% of adult cats in the Kandy district harbour *Syngamus mcgaughei* and a hitherto unrecorded species of lungworm, tentatively named *Filuroides ceylanicus*. Reference is made to other helminth infestations of veterinary importance, including cerebro-spinal nematodiasis and visceral larva migrans. The author emphasizes the great need in Ceylon for veterinary parasitologists to deal with problems relating to such heavy and widespread helminth infestations. H.C.

300—Proceedings of the Indian Academy of Sciences. Section B.

- a. THAPAR, G. S. & SINGH, K. S., 1954.—“Studies on the life-history of *Trichuris ovis* (Abildgaard, 1795) (fam. Trichuridae: Nematoda).” 40 (3), 69–88.

(300a) Thapar & Singh redescribe *Trichuris ovis* and give an account of cleavage of the ovum and the first, second, third and fourth-stage larvae. They exposed the earthworms *Pheretima posthuma*, *Eutyphoeus waltoni* and *Allolobophora* sp. to embryonated eggs but no infection occurred, confirming that there is no intermediate host. In experimentally infected kids and a rabbit worms were found at post-mortem only in the caecum. The incidence of *T. ovis* in sheep and goats slaughtered at Lucknow, India, was determined by daily examination of one of each animal for two years. The tabulated results show that goats and sheep have coincident peaks of infection and that these worms are present in the proportions of two males to five females in both kinds of animals. M.MCK.

301—Proceedings of the National Academy of Sciences of the United States of America.

- a. BUEDING, E., RUPPENDER, H. & MACKINNON, J., 1954.—“Glucosamine kinase of *Schistosoma mansoni*.” 40 (9), 773–777.

(301a) Bueding *et al.* have demonstrated the presence of a fourth hexokinase in homogenates of *Schistosoma mansoni*; this catalyzes the phosphorylation of glucosamine by adenosine triphosphate. As other differences in the enzyme systems of host and parasite have been recently demonstrated the authors have tested the effect of glucosamine on *S. mansoni* both *in vitro* and *in vivo*. The percentage reduction of survival time in a synthetic medium ranged from 37%–82% and in horse serum from 31%–73%. A significant reduction in the number of adult schistosomes recovered from infected mice was obtained by oral and by intraperitoneal administration of glucosamine. They conclude that further knowledge of the comparative biochemistry of parasites will lead to the development of more effective chemotherapeutic agents. S.W.

302—Proceedings of the Society for Experimental Biology and Medicine.

- a. POLLAY, M., WEIN, B. & HARTMANN, H. A., 1954.—“Effect of ACTH upon artificially induced trichinosis in rats with special reference to eosinophilia.” 86 (3), 577–580.

(302a) Using male rats (average weight 60–80 gm.) Pollay *et al.* have studied the effect of ACTH on experimental *Trichinella* infection. As controls infected and uninfected rats were injected with physiological saline, and uninfected rats with ACTH. The eosinophilia was strikingly reduced from the 14th day after infection when the ACTH was first given, to the 17th day but rose again steadily from the 17th day to the 20th day. In treated animals the inflammatory response in the muscle was altered and the bone marrow showed a myelocytic hyperplasia with many eosinophils and megakaryocytes but the animals did not appear to benefit from the treatment. S.W.

303—Proceedings of the Zoological Society of London.

- a. CLARKE, A. S., 1954.—“Studies on the life cycle of the pseudophyllidean cestode *Schistocephalus solidus*.” 124 (2), 257–302.
 b. PORTER, A., 1954.—“Report of the Honorary Parasitologist for the year 1953.” 124 (2), 313–316.

(303a) In laboratory experiments, Clarke has followed the developmental stages of *Schistocephalus solidus* in its Cyclops hosts and in sticklebacks. Hatching of the coracidium varies with temperature and with intrinsic factors and may occur up to six weeks after the eggs have been shed. The procercoid may penetrate the fish gut within two hours. Its excretory system can be effectively displayed by embedding in transparent plastic. *Cyclops vernalis americanus*, an addition to the known vectors, was successfully infected. R.T.L.

(303b) Examination of the faeces of six chimpanzees in the London Zoological Gardens showed schistosome type eggs and *Strongyloides* larvae in one, “hookworm ova” which were found to be those of *Oesophagostomum dentigerum* in one, Necator type ova in two, *Enterobius* sp. ova in three and *Trichuris trichiura* ova in two. In a young male orang utan, Necator type ova, a gravid *Enterobius*, *T. trichiura* ova and a nematode not yet identified were found. *O. dentigerum* infection was detected in two young female orang utans. *Ophidascaris* ova occurred in *Python amethysteum*, *P. reticulatus*, *Testudo graeca* and *Bitis arietans*, *Tachygonettra* sp. ova in *Testudo graeca*, and *Kalicephalus* sp. in *Bitis arietans*. In the aquarium octobothriid flukes, *Dactylogyrus*, *Diplostomulum*, *Capillaria* and Echinorhynchids were present in *Salmo salar*, *Discocotyle salmonis* in *S. irideus*, gill infections with *Dactylogyrus* and *Lamellodiscus* in *Sargus fasciatus*, and *Ancyrocephalus*, *Dactylogyrus* and *Benedenia* in *Dasybatis pastinacea*. A *Capillaria* sp. occurred in *Geophagus brasiliense*. R.T.L.

304—Progresso Veterinario. Torino.

- a. PELLEGRINO, A., 1954.—“Sulla frequenza della cisticercosi bovina.” 9 (5), 174, 176, 178, 180.

(304a) The incidence of cysticerciasis in cattle carcasses at the public slaughterhouse of Genoa showed an increase from 3.4% to 8% between 1951 and 1953. M.MCK.

305—Radiology.

- a. BERGER, I. R. & COWART, G. T., 1954.—“Renal echinococcus disease.” 62 (6), 852–857.

306—Research Bulletin of the Panjab University, Hoshiarpur.

- a. DHINGRA, O. P., 1954.—“Gametogenesis and fertilization in *Isoparorchis eurytremum*.” No. 44 (Zoology), pp. 21–37.

(306a) Dhingra gives a very full illustrated account of gametogenesis and fertilization in *Isoparorchis eurytremum*. The diploid number of chromosomes is 20. In the male cells the

mitochondria form a cap-like mass close to the nucleus but they do not contribute to spermatozoon formation; two flagella are formed from a single centrosome. In the female cells two polar bodies are extruded of which the first undergoes division into two unequal halves. The author describes the Golgi apparatus which grows and divides during spermatogenesis but disappears in the spermatid.

S.W.

307—Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales.

- a. MUÑOZ-RIVAS, G., 1954.—“Fascioliasis experimental.” 9 (35), 156–158.

(307a) Guinea-pigs were experimentally infected with *Fasciola hepatica* from naturally infected *Limnaea bogotensis* collected at Soacha and from *L. bogotensis* experimentally infected with miracidia derived from five known human cases and from the livers of slaughtered cattle. A xiphidiocercaria common in *L. bogotensis* on the savannah of Bogotá produced a small distome, probably a plagiorchid, when fed to a rat. Three tables give the incidence of various cercariae in 707 *Planorbis* sp., 6,031 *L. bogotensis*, 330 *Physa* sp. and 51 *Plekocheilus delicatus* collected from several parts of Colombia.

M.MCK.

308—Revista Brasileira de Biologia.

- a. TRAVASSOS, L., 1954.—“Contribuição para o conhecimento dos nematódeos parasitos de coleópteros aquáticos.” 14 (2), 143–151.
b. JORGE DA SILVA, A. A., 1954.—“Nova espécie do gênero *Cosmocerca* Diesing, 1861 (Nematoda, Cosmoceridae).” 14 (2), 163–165.

(308a) Three parasitic nematodes are described from the intestine of an aquatic beetle, *Hydrophilus ater*, caught at Fazenda da Pedra, Ribeirão Preto, in the state of São Paulo, viz., (i) *Toddia toddi* n.g., n.sp. which is distinguished from *Zonotrix* by its more or less subulate tail and by the presence of a cuticular ring immediately behind the buccal aperture; the anterior lip of the vulva is not salient; (ii) *Stegonema stegonema* n.g., n.sp. which is characterized by six longitudinal rows of scale-like protuberances extending from the anterior end to half-way along the oesophagus; (iii) *Pseudonymus vazi* n.sp. which is similar to, but smaller than, the insufficiently described type species *P. spirotheca*. *Oxyuris (Helicotrix) hydrophili* Galeb, 1878 and *Pseudonymus brachycercus* Todd, 1944 are transferred to *Toddia* as new combinations.

M.MCK.

(308b) *Cosmocerca freitasi* n.sp. lives in the large intestine of *Hyla fuscovaria* in the state of Rio de Janeiro. This new form raises the number of species of *Cosmocerca* to 15. In the female of *C. freitasi* the vulva is more posterior than in *C. australiensis* and *C. propinqua*. *C. parva*, *C. minuscula* and *C. limnodynastes* have a greater number of caudal papillae, while *C. japonica* has longer spicules.

M.MCK.

309—Revista Ibérica de Parasitología.

- a. LÓPEZ-NEYRA, C. R., 1954.—“Anoplocephalidae.” 14 (1), 13–130.
b. LÓPEZ-NEYRA, C. R., 1954.—“Anoplocephalidae. (Continuación.)” 14 (2), 225–290.
c. LÓPEZ-NEYRA, C. R., 1954.—“Anoplocephalidae. (Continuación.)” 14 (3/4), 303–396.
d. GUEVARA POZO, D., 1954.—“Dos notas sobre anomalías del *Ascaris lumbricoides* del cerdo.” 14 (3/4), 409–413.

(309a) Fuhrmann's families Davaineidae and Anoplocephalidae are united under Anoplocephalidae Fuhrmann, 1907 emend. López-Neyra, 1954, and classified into: (i) Anoplocephalinae Blanchard, 1891 emend. López-Neyra, 1954, (ii) Davaineinae Braun, 1900 emend. López-Neyra, 1954, (iii) Idiogeninae Fuhrmann, 1907 emend. López-Neyra, 1954, (iv) Inermicapsiferinae López-Neyra, 1947 emend. López-Neyra, 1954, each with keys for the

genera. The second part of the paper systematically describes the subfamily Anoplocephalinae as now emended by López-Neyra to include the Ophryocotylinae Fuhrmann, 1907. It is characterized by a persistent uterus. Keys are given for the identification of genera and species, and the species are listed with the names and localities of their vertebrate hosts. Several genera are combined or reunited, e.g. *Paranoplocephala* = *Pseudanoplocephala* = *Anoplocephala*, *Schizorchis* = *Monoecocestus*, *Triplotaenia* = *Cittotaenia*, and *Hepatotaenia* = *Progamotaenia*. M.MCK.

(309b) A systematic description is given of the subfamily Davaineinae Braun, 1900 emend. López-Neyra, 1954 [not to be confused with Davaineinae emend. López-Neyra, 1947]. The newly emended subfamily brings together *Davainea*, *Porogyna* and *Skrjabinia* from the Davaineinae of Braun, and *Linstowia* and *Oochoristica* from the Linstowinae of Fuhrmann. The species are tabulated comparatively and are listed, with relevant details, under the orders to which the vertebrate hosts belong. [A key to the genera of the subfamily Davaineinae was given in the first part of this paper see No. 309a above.] M.MCK.

(309c) *Inermicapsifer*, *Meggittia*, *Pancerina* and *Cotugnia* are systematically redescribed under a new subfamily *Inermicapsiferinae* López-Neyra, 1954 [not to be confused with *Inermicapsiferinae* López-Neyra, 1947]. *Raillietina* and *Inermicapsifer* are united under the latter name, but subdivided into three new subgenera *I. (Inermicapsifer)*, *I. (Raillietina)* and *I. (Thysanotaenia)*. Species of each genus and their synonyms are listed under the various orders to which the vertebrate hosts belong. Specific characters are tabulated and there are numerous illustrations. M.MCK.

(309d) Eggs from an abnormal *Ascaris lumbricoides* with three, instead of two, uterine branches were fed to a piglet. They produced two worms, both normal adult females. From other pigs Guevara Pozo records giant *A. lumbricoides* females up to 45.5 cm. long. M.MCK.

310—Revista del Instituto de Salubridad y Enfermedades Tropicales. Mexico.

- a. MAZZOTTI, L., 1954.—"Estudio comparativo entre la biopsia y la escarificación cutáneas en el diagnóstico de la oncocercosis." 14 (1), 19-23. [English summary p. 23.]

(310a) Mazzotti has studied on 100 cases of onchocerciasis the comparative diagnostic efficacy of cutaneous biopsy and scarification. Both tests were carried out on each individual. Positive results were obtained by biopsy in 94% and by scarification in 82%. R.T.L.

311—Revista de Sanidad e Higiene Pública. Madrid.

- a. SAIZ MORENO, L., 1954.—"Aspecto sanitario de la hidatidosis y orientaciones para su profilaxis." 28 (3/4), 160-176.

312—Revue d'Élevage et de Médecine Vétérinaire des Pays Tropicaux.

- a. BÜCK, G., QUESNEL, J. J. & RAMBELOSON, L., 1954.—"Essais de traitement de la bronchite vermineuse porcine." 7 (1), 1-4.

(312a) In Madagascar Bück *et al.* treated pigs harbouring ascarids and *Metastrongylus elongatus* with Didakol alone, 3% aqueous carbolic solution and notezine. The first two were injected subcutaneously, the third administered orally; notezine yielded the best results and was harmless to young piglets; growth increased and eggs usually disappeared from the faeces. Carbolic acted less quickly and injections had to be spaced to avoid local reactions. Notezine and carbolic were administered together without increased effect. Only Didakol was fatal to piglets under 20 kg. body-weight but proved successful in those over 25 kg. In two cases where whipworms were also present notezine had no effect on them. M.MCK.

313—Revue de Médecine Vétérinaire.

- a. RIVASSEAU, D. & RIVASSEAU, P., 1954.—“Injection d'extraits d'*Ascaris* et choc anaphylactique, chez le cheval.” 105, 15-17.

(313a) Extract of whole *Ascaris* was injected intradermally into the eyelids of eight horses which had been previously sensitized. Three showed no reactions; five showed symptoms of anaphylactic shock which varied in intensity, the most violent reactions occurring in a horse found post mortem to have two hydatid cysts on the lung. None had ascarids in the intestine. From observations on the clinical symptoms and investigations of the lesions produced the authors conclude that it is the histamine produced in the antigen-antibody reaction which is responsible for the manifestations. S.W.

314—Revue de Pathologie Générale et Comparée.

- a. MOIGNOUX, J. B., 1954.—“Enquête épidémiologique sur l'onchocercose des chevaux en Camargue.” 54 (657), 569-573.

(314a) In a survey carried out in the Camargue, Moignoux found eight out of 134 horses examined to be infected with *Onchocerca*. In none of the cases could the presence of microfilariae be related to cervical onchocerciasis. The incidence is similar to that reported in this area in 1910. The infection occurs in a number of small isolated foci, all in the more northerly part; the increasing salinity of the water towards the south probably makes it an unsuitable breeding place for the insect intermediaries. S.W.

315—Rhodesian Tobacco.

- a. STOKES, W. M. & MARTIN, G. C., 1954.—“Failure of an attempt to control root-knot nematode by electrical means.” Year 1954, No. 6, pp. 30-32.

(315a) Stokes & Martin describe a series of critical experiments on the destruction of root-knot nematode. Preliminary investigation showed that *Meloidogyne javanica* was the only species present. Experiments with steam-sterilized sandveld soil in boxes 16 in. × 16 in. × 3 in. with electrodes spaced at 12 in. and 6 in. apart resulted in effect on the nematode. Tests on larvae in water showed that voltages of approximately 800 per inch were necessary to kill root-knot larvae and that voltages of 400-600 per inch could temporarily stem them; voltages of 320 per inch were without effect; these results were applicable to tests using a microscope fitted with needle electrodes, the water being in the form of a narrow and shallow skin. Experiments to determine whether the large scale rig could produce these conditions in perspex trays 20 in. × 16 in. × 1 in. gave disappointing results it being impossible to produce suitable voltage gradients. The authors conclude that using the electrical rig previously described [see Helm. Abs., 21, No. 383a] it was impossible to produce a sufficiently high voltage to kill larvae of *M. javanica* in any of the media used other than a narrow skin or film of water. D.W.F.

316—Rhodesian Tobacco Journal.

- a. MARTIN, G. C., 1954.—“Nematodes.” 6 (4), 65-70; (5), 109, 111, 113; (6), 115.

(316a) This is a popular article indicating the type of damage which may be caused by nematodes parasitic on the roots of plants, with special reference to root-knot, root-lesion and spiral nematodes in Rhodesia. A list of 40 plants found attacked by *Meloidogyne javanica* and 12 by *M. hapla* in Rhodesia and Uganda includes brief notes on the degree of damage. M.T.F.

317—Sad i Ogorod. Moscow.

- a. SEMENOV, I. A., 1954.—[The control of stem nematodes.] Year 1954, No. 6, pp. 42-43. [In Russian.]

(317a) In this popular article on eelworms of potatoes, Semenov describes the biology of infestation and draws attention to the fact that severely affected potatoes are of no use for

human and animal feeding. In the experimental plots he found that potatoes planted late were less affected by nematodes than those planted early, and as potatoes planted late produce low yields in some years, he thinks that at least the late season of planting should be recommended for seed potatoes. It was also found that of potatoes planted on experimental plots on 24th April and lifted on 20th July 4.8% were infested, on 5th August 9.6%, on 15th August 21%, on 25th August 25.2% and on 5th September 41% were infested. He thinks that planting of varieties ripening early could also be recommended in the control of eelworm. C.R.

318—Science. Lancaster, Pa.

- a. VALLEJO-FREIRE, A., RIBEIRO, O. F. & RIBEIRO, I. F., 1954.—“Quaternary ammonium compounds as molluscicides.” 119 (3093), 470–472.

(318a) The molluscicidal effect of solutions of about 20 quaternary ammonium compounds on *Australorbis* sp. has been studied. The results after 48 hours contact are tabulated. 100% mortality was recorded at concentrations of 20 p.p.m. or more. Investigation of mortality after withdrawal of contact showed that the retarded effect can be considerable. Compared with other molluscicides these compounds are less toxic to man and domestic animals. M.MCK.

319—South African Medical Journal.

- a. HAGBERG, C. J. & MAIZELS, G., 1954.—“Solitary hydatid cyst of the uterus.” 23 (24), 499–500.
- b. PITCHFORD, R. J., 1954.—“A comparative study of examination of urine and stool, and of rectal biopsy material, for diagnosis of bilharziasis.” 28 (25), 518–520.

(319b) Pitchford made a comparative study of the merits of rectal biopsy, stool examination and urine examination in the diagnosis of schistosomiasis in areas of moderate and high incidence of the disease. For the recovery of viable *Schistosoma mansoni* eggs there were no significant differences between the findings at rectal biopsy and those from stool examination, but for the recovery of non-viable eggs, rectal biopsy was tremendously superior to stool examination. *S. mansoni* found at urine examination was negligible and the two cases recorded showed only non-viable eggs. In *S. haematobium* infections there was a significant difference in the total positives found by rectal snip (80.4%) and urine examination (60% to 66%), but Pitchford suggests this difference would have vanished if a centrifuge had been used in his technique. The rectal biopsy method for *S. haematobium* would, however, give a completely false impression of the activity of the disease in any individual since a high percentage of the cases showed only non-viable eggs in rectal snips. D.L.H.R.

320—Studies from the Institute for Medical Research, Federation of Malaya.

- a. SANDOSHAM, A. A., 1954.—“Malaysian parasites II. Preliminary note on the incidence of worm infection in common hosts.” Year 1953, No. 26, pp. 23–28.
- b. SANDOSHAM, A. A., 1954.—“Malaysian parasites XII. Cercarial dermatitis caused by a member of the ‘Elvae’ group.” Year 1953, No. 26, pp. 195–198.
- c. SANDOSHAM, A. A., 1954.—“Malaysian parasites XIII. Studies of larval trematodes from snails.” Year 1953, No. 26, pp. 199–209.
- d. SANDOSHAM, A. A., 1954.—“Malaysian parasites XIV. Worm infections of some Malayan aborigines.” Year 1953, No. 26, pp. 210–211.
- e. SANDOSHAM, A. A., 1954.—“Malaysian parasites XV. Seven new worms from miscellaneous hosts.” Year 1953, No. 26, pp. 212–226.

(320a) Sandosham, after briefly summarizing previous investigations on helminth infections in Malaya, tabulates under hosts the number of specimens of Acanthocephala, Nematoda, Trematoda and Cestoda found by the Colonial Office Scrub Typhus Research Unit in various wild and domesticated animals. [The individual helminth species are not identified in this paper.] R.T.L.

(320b) Sandosham reports on an unusually severe outbreak of "sawah itch" among the rice cultivators in the Ayer-Luning District, Negri Sembilan, which was detected in 1948 by Dr. Suleiman who collected and forwarded specimens of *Limnaea crosseana*. Of 72 specimens, 19 extruded cercariae and 13 of them discharged a furcocercous variety of the *elvae* group which is provisionally named *Cercaria malayi I*. Within four minutes after being applied in water to the forearm the cercariae caused a pricking sensation which reached its maximum intensity in 12 minutes. About three hours after their application the skin was slightly raised and inflamed. When the experiment was repeated on two chickens the skin showed numerous red spots but no evidence of infection was found when the birds were autopsied some weeks later.

R.T.L.

(320c) Specimens of *Limnaea crosseana* from Malaya discharged echinostome cercariae of two kinds (those with 43 collar spines now named *Cercaria malayi II* and those with 50 or more collar spines now named *Cercaria malayi III*), a furcocercous cercaria belonging to the *Strigea* group now named *Cercaria malayi IV* and a xiphidocercaria with stylet now named *Cercaria malayi V*. Specimens of *Limnaea crosseana* and *Planorbis exustus* contained also metacercariae with 37 collar spines: when fed to ducks these developed into adult *Echinostoma revolutum*.

R.T.L.

(320d) Although examination of the faeces of 117 Senoi aborigines in Pahang showed that 49% had hookworm, 80% had *Ascaris* and 24% had *Trichuris*, the infections were very light. In 13 out of 90 cases with *Ascaris*, only unfertilized ova were present. No eggs of *Taenia* were seen but two cases were reported by the Protector of Aborigines in Malaya. The assistant in charge of the travelling dispensary saw cases of elephantiasis of the leg among those aborigines living along the river to the south of Pekan. Of fourteen faecal specimens collected from a small aboriginal reserve in the district of Ulu Langat, near Kajang in Selangor, there were hookworm ova in two and *Ascaris* ova in two.

R.T.L.

(320e) Sandosham has identified as a male gordiid a worm labelled "passed *per anum* by patient at Kampar Hospital, September 1930". He also describes and figures: (i) *Paragonimus macacae* n.sp. from *Macaca irus* in which the cuticular spines from an area between the suckers are single, somewhat cylindrical, not much longer than broad and are closely set in irregular rows; (ii) *Setaria thomasi* n.sp. from *Sus scrofa jubatus* shot near Kelantan in which the caudal papillae number 14, seven pairs being pre-cloacal; (iii) the male of *Setaria javensis* from *Tragulus javanicus*, now recorded for Malaya; (iv) *Gnathostoma doloresi* from the liver of a Malayan-bred pig in Singapore; (v) *Proleptus malayi* n.sp., from *Scyllium* sp. caught in Malayan waters, in which the right spicule measures 0.185 mm. to 0.23 mm. in length and the left spicule 0.85 mm. to 0.90 mm. in length; (vi) *Africana singaporensis* n.sp. from *Bufo melanostictus* in Singapore has 22 pairs of caudal papillae of which three are pre-suctorial, three are para-suctorial, five between the sucker and the cloacal opening, and 11 post-anal, and the spicules are equal and similar and measure 0.74 mm. to 0.96 mm. in length: in these respects it differs from the most closely related species *A. africana*.

R.T.L.

321—Tijdschrift voor Diergeneeskunde.

- a. HOFSTRA, K., 1954.—"Over de verspreiding der cysticercose van het rund in Nederland." 79 (11), 417-428. [English, French & German summaries pp. 427-428.]

(321a) Hofstra presents the results of a survey, carried out during 1946 and 1947 in the abattoirs in The Hague, of the incidence of *Cysticercus bovis* in cattle in the Netherlands. Infected animals were found amongst cattle from all parts of the country. The incidence in different districts is tabulated. Of the infected animals, 95% contain only one cysticercus and it is suggested that infection is often by onchospheres. Because of the geographical features, contamination of pastures and water supplies by sewage water which drains into the Netherlands from other countries appears to be a likely source of infection, and the need for some form of international control is emphasized.

S.W.

322—Transactions of the Royal Society of Tropical Medicine and Hygiene.

- a. WALTERS, J. H., 1954.—“Uncommon endemic diseases of the Persian Gulf area.” 48 (5), 385-394.
- b. HALCROW, J. G., 1954.—“The vectors of filariasis in Mauritius.” 48 (5), 411-413.
- c. BAYER, F. A. H., 1954.—“Larval trematodes found in some fresh-water snails: a suggested biological method of Bilharzia control.” 48 (5), 414-418.
- d. LEROUX, P. L., 1954.—“Identification of *Bulinus* and *Physa*.” [Correspondence.] 48 (5), 443.
- e. NEWSOME, J., 1954.—“Hetrazan, and stibophen, in schistosomiasis.” [Correspondence.] 48 (5), 445-446.
- f. RAISON, C. G. & STANDEN, O. D., 1954.—“A new series of schistosomicides.” [Correspondence.] 48 (5), 446-447.
- g. WALKER, A. R. P., FLETCHER, D. C. & TRAILL, V., 1954.—“An investigation of haemoglobin concentration and of blood loss in stools in adult South African Bantu infested with intestinal *Schistosoma mansoni*.” 48 (6), 501-505.
- h. HUTTON, P. W., 1954.—“Severe onchocercal dermatosis responding to suramin and diethyl-carbamazine: an illustrative case.” 48 (6), 522-525.
- i. JORDAN, P., 1954.—“Microfilariae in dejecta of mosquitoes.” [Correspondence.] 48 (6), 537.
- j. SCHWARZ, E., 1954.—“The shape of the prostate gland in geographical forms of *Biomphalaria alexandrina* Ehrenberg.” [Correspondence.] 48 (6), 537-538.
- k. LAURIE, W., 1954.—“Dracontiasis in Tanganyika, British East Africa.” [Correspondence.] 48 (6), 538-539.
- l. LOBATO PARAENSE, W., PEREIRA, O. & BUSTORFF PINTO, D., 1954.—“Re-invasion of breeding places by snails.” [Correspondence.] 48 (6), 540.
- m. CRIDLAND, C. C., 1954.—“Viability of ova of *Schistosoma mansoni*.” [Correspondence.] 48 (6), 541-542.

(322a) Owing to the influx of population into the State of Kuwait following the exploitation of its rich oil field, Kuwait proved a convenient focus from which to survey the diseases endemic in the coastal region of the Persian Gulf and south-eastern Arabia. Among the diseases seen by Walters in Kuwait were six cases of schistosomiasis *mansoni*. They all came from Majma, a small fertile area almost in the centre of the Arabian peninsula. R.T.L.

(322b) Halcrow supplements Huehns' paper [for abstract see Helm. Abs., 22, No. 413b] on the incidence of bancroftian filariasis in Mauritius by tabulating the natural infectivity rates of *Culex fatigans* and *Anopheles gambiae*. The former is probably of greater importance as a vector owing to the indifference of the latter to the source of its blood meal. Notes are also given of the distribution of these two species. Their greatest activity was during the two or three hours after sunset when the villagers were out of doors talking, singing or cooking. During the later hours the mosquitoes fed on goats and dogs and the interiors of the houses were then free from mosquitoes. R.T.L.

(322c) Bayer summarizes his findings of cercariae in *Physopsis africana*, *Biomphalaria pfeifferi*, *Bulinus tropicus*, *Limnaea natalensis* and *Melanoides tuberculata* collected from a dam and two small streams on the outskirts and elsewhere in the neighbourhood of Durban. He confirms that in captivity parasitized snails live only half as long as uninfected snails. As infection with echinostome larvae causes organic damage to the snails he suggests that strict preservation of waterfowl and, where these have been exterminated, their replacement by domestic ducks purposely fed with echinostomatid cysts when necessary might usefully supplement other measures for the control of bilharzia vectors. R.T.L.

(322d) leRoux maintains his opinion that one of Schwarz's illustrations of *Bulinus* in *Trans. R. Soc. trop. Med. Hyg.*, 47, 451-502 is that of a *Physa*. R.T.L.

(322e) Newsome gave a single course of 100 mg. per kg. body-weight of hetrazan to each of eight Gambians with *Schistosoma haematobium* infections and made hatching tests with the urine monthly for three or four months. Although one patient became egg-free one month after treatment all the cases showed infection after three or four months and in three of them the haematuria had recurred. Six out of nine patients who received a course of

20 c.c. of stibophen spread over four or five days showed no eggs in the urine one month after treatment but two had relapsed in four months. Yet this low dosage with stibophen was more effective than the treatment with hetrazan.

R.T.L.

(322f) Raison & Standen give the basic formula of a series of compounds of a new type which in experimental animals show marked schistosomicidal activity when given by the mouth, but in man reveal certain shortcomings which must be overcome before they can be used clinically.

R.T.L.

(322g) Walker, Fletcher & Traill investigated the haemoglobin concentration and loss of blood in stools of Bantu mine workers, both with and without *Schistosoma mansoni* infestation (but with other helminths present in both groups), and Bantu men and women farm labourers from an area where infestation of both forms of bilharzia is almost invariable. No significant differences were found in the haemoglobin concentration of Bantu with *S. mansoni* and those without the infection. Twenty per cent of the former and 22% of the latter showed blood in the stools but the loss of blood was small. In the group infected with both types of bilharzia, the haemoglobin levels lay within the normal limits for healthy white men and women, after correction for altitude.

D.L.H.R.

(322h) Hutton describes the case of a patient suffering from a severe skin condition considered to be due to onchocerciasis, although neither microfilariae nor adults were found. The patient had, however, lived in an area where the greater part of the population was affected with *Onchocerca volvulus*. He had a skin histology compatible with a filarial dermatitis, a consistently high blood eosinophilia and a marked reaction to a small dose of diethylcarbamazine, both local and constitutional. After the reaction had subsided 9 gm. of diethylcarbamazine were administered over a period of 20 days, and although the subjective symptoms disappeared the skin condition was unchanged. Some three years later, during which he had received only one further dose of 3 gm. of diethylcarbamazine spread over ten days, the skin condition was much worse. After treatment with banocide and antrypol, he received 22.2 gm. of diethylcarbamazine in 36.6 days. Six months later the skin had returned to nearly normal, the papular rash had disappeared, the adenopathy had markedly regressed, the eosinophil count had dropped and there was no reaction to 50 mg. of diethylcarbamazine. The use of the two drugs seriatim, suramin to kill the adults and diethylcarbamazine to clear remaining microfilariae appeared to have cured the condition.

D.L.H.R.

(322i) Jordan allowed *Aedes aegypti* and *Culex fatigans* to feed on monkeys infected with *Dirofilaria aethiops* and on patients with *Wuchereria bancrofti* respectively. At the time of feeding both species of mosquito passed clear fluid but after two to three days, for a period of 24-48 hours, dejecta containing the remnants of the blood-meal were passed and in this microfilariae of both filarial infections were frequently found. Jordan points out that these findings help to explain the gradual reduction in the number of microfilariae found in mosquitoes dissected on consecutive days following an ingested blood meal and may also explain the lack of relationship between the number of microfilariae in the peripheral circulation during a blood meal and the number of developmental forms found later.

D.L.H.R.

(322k) Laurie reports the finding of an infection in a dog, owned by a European in Tanganyika, in every way typical of *Dracunculus medinensis*. The blister burst to show a worm and milky fluid containing great numbers of embryos which on examination were found to correspond with the rhabditoid larval stage of *D. medinensis*. The dog had never left the town and no case of guinea-worm has ever been reported among the non-indigenous Africans or among the Asians in the area.

D.L.H.R.

(322l) The authors made oecological investigations in the locality of Tarumirim in order to explain the reinvasion of breeding places by snails consistently reappearing some months after treatment with the molluscicide sodium pentachlorophenate. They found that living snails occurred in the mud, buried at depths varying up to 40 cm. and about 2 metres from the

edges of the collections of water. Reinvasion of these collections of water either after treatment with molluscicides or on the return of favourable conditions after climatic severities was due to these buried snails which, being in the ground, were able to withstand the alteration in their environment.

D.L.H.R.

(322m) Cridland carried out experiments to find out how long ova of *Schistosoma mansoni* could remain dormant and still retain their ability to hatch and produce miracidia capable of infecting *Biomphalaria sudanica tanganikana*. Faeces containing many ova were kept in a closed bottle at 30°C. and portions taken daily for hatching miracidia. On each day 30 snails were exposed individually to 15 miracidia. Seventy-two hours was the maximum time at which ova could be hatched and although the miracidia were sluggish, they were able to infect snails. It was concluded that if ova were sent in the post for infection experiments, there was a reasonable chance of success if they arrived at their destination within 72 hours.

D.L.H.R.

323—Turrialba. Revista Interamericana de Ciencias Agrícolas.

- a. OLSEN, K. L. & THOMAS, N. F., 1954.—“Efectividad de dos fumigantes del suelo y dos insecticidas contra el nemátodo de las agallas de las raíces en tomates y okra.” 4 (1), 23–28. [English summary p. 23.]

(323a) The authors tested Dowfume W-40, D-D mixture, parathion and aldrin separately, and combinations of aldrin with dowfume, aldrin with D-D and aldrin with parathion, against *Meloidogyne incognita* var. *acrita* using tomato and okra as test crops. “Successful control” was obtained by using 30 gal. per acre of either Dowfume W-40 or D-D, the mean index of infestation for the best treatment being 31 on okra and 11 on tomato; yields were increased 3 to 3½ times.

M.T.F.F.

324—Veterinariya.

- a. ANON., 1954.—[Duties of veterinarians attached to the machine and tractor service stations in the control of helminths.] 31 (4), 10–13. [In Russian.]
 b. POTEKINA, V. A., 1954.—[Aminoacridine and filixan against *Moniezia* in sheep.] 31 (4), 14–15. [In Russian.]
 c. DEMIDOV, N. V., 1954.—[Treatment of *Fasciola* infection in sheep with carbon tetrachloride.] 31 (4), 16–18. [In Russian.]
 d. NOSIK, A. F., 1954.—[Fluorine compounds for treatment of helminths in pigs and horses.] 31 (4), 18–20. [In Russian.]

(324b) Potemkina examined the anthelmintic action of an aminoacridine and filixan against *Moniezia* in lambs 3–6 months old. She found that the most effective was aminoacridine at a dose of 0.2 gm. per kg. body-weight. The efficacy reached 100%. When the dose was reduced to 0.1 gm. per kg. extensefficacy was reduced to 50% and intensefficacy to 90%. Aminoacridine at a dose of 0.35 gm. per kg. killed lambs in 12 hours. Filixan was effective against *Moniezia*. A dose of 0.2 gm. to 0.3 gm. per kg. body-weight gave intensefficacy of 92% and extensefficacy 50%. When the dose of filixan was reduced to 0.1 gm. per kg. its efficacy was reduced to 72%–81%.

C.R.R.

(324c) Demidov used carbon tetrachloride subcutaneously at a dose of 2 ml. to 3 ml. against *Fasciola hepatica* in sheep and found it as effective as when introduced by the mouth and into the rumen. He used this method of treatment in 1,018 sheep without any complications and thinks that this method should be recommended.

C.R.R.

(324d) Nosik reports on experiments in pigs and horses using small doses of sodium fluoride and sodium silicofluoride. In pigs he found that sodium fluoride at a dose of 0.015–0.02 gm. per kg. body-weight given daily for 4–5 days was 100% effective against *Ascaris lumbricoides* and *Oesophagostomum dentatum*; it also reduced *Trichuris* by up to 50%. A dose of 0.04 gm. per kg. body-weight of sodium silicofluoride given 3 times daily for 4–5 days was

324—Veterinariya (cont.)

- e. KOLOMAKIN, G. A. & PONOMAREV, S. D., 1954.—[Large-scale trials of phenothiazine in sheep.] 31 (4), 21–23. [In Russian.]
- f. BALABEKYAN, T. P., 1954.—[Neoscarids in the stomach of calf.] [Abstract.] 31 (4), 23. [In Russian.]
- g. BONDAREVA, V. I. & DIKOV, G. I., 1954.—[Pumpkin seeds as anthelmintic against cestodes in dogs.] [Abstract.] 31 (4), 23. [In Russian.]
- h. BORISOV, A. M., 1954.—[Toxicity of hexachlorethane.] [Abstract.] 31 (4), 23. [In Russian.]
- i. BUTORIN, F. S., 1954.—[Treatment of sheep affected with broncho-pneumonia and Dictyocaulus with ASD.] [Abstract.] 31 (4), 23–24. [In Russian.]
- j. VASILEVSKI, M. L., 1954.—[Reaction of some horses to repeated treatment with phenothiazine.] [Abstract.] 31 (4), 24. [In Russian.]
- k. VOROBEV, M. M., 1954.—[The epizootology and biology of *Agamospirura*.] [Abstract.] 31 (4), 24. [In Russian.]
- l. VOROBEV, M. M. & KOLOTILOV, I. G., 1954.—[Epizootology of *Filicollis* in ducks in the Ukraine.] [Abstract.] 31 (4), 24. [In Russian.]

also 100% effective against *Ascaris* and oesophagostomes. In horses, he found that sodium fluoride in a dose of 0.01–0.15 gm. given twice daily for three days, and 0.02–0.025 gm. per kg. of sodium silicofluoride, also given twice daily during three days, were very effective. *Parascaris* were being eliminated from the host on the third to the fifth day. Oxyuris and strongyles were also affected by this treatment. Sodium fluoride compounds were given mixed with concentrated food. This food mixed with a drug appeared to be quite palatable to the animals. Except for a few cases of diarrhoea there were no other side effects. C.R.

(324e) The authors found that feeding phenothiazine mixture (1:10) *ad lib.* to sheep in Kazakhstan during April and May prevented outbreaks of haemonchiasis. Feeding of this mixture until the autumn increased the weight gain in sheep. Single doses of phenothiazine given to sheep in the spring prevented outbreaks of haemonchiasis but had no significant influence on the gain in weight. On all farms where phenothiazine-salt mixture was fed to sheep, either in spring only or until the autumn, it was noticed that *Dictyocaulus* was also reduced. C.R.

(324f) The author reports the finding of 17 adult neoscarids in the stomach of a 21-day-old calf. While alive, the calf refused feed and was in poor condition. C.R.

(324g) The authors fed pumpkin seeds to eight dogs infested with tapeworms at a dose of 100–200 gm. per dog. The efficacy was 75%. When pumpkin seeds were fed to 38 sheep-dogs at a dose of 200–300 gm. after 18–24 hours strict diet the efficacy was 99% against *Multiceps*, 94% against other taeniids but very low against *Echinococcus granulosus*. C.R.

(324h) Borisov reports the death of beavers infected with *Stichorchis* which were treated with technical hexachlorethane in doses of 0.4 gm. per kg. body-weight. C.R.

(324i) The author used two fractions of ASD in three groups of sheep. He obtained good results only with ASD f2 which produced a general improvement in the condition of the animals and eight out of ten sheep became free from *Dictyocaulus*; this drug had no effect on *Muellerius*. C.R.

(324j) Vasilevski found that in a certain percentage of horses treated for a second time, and more often, with phenothiazine there appeared to be a pathological reaction. In such cases he recommends the use of other anthelmintics. C.R.

(324k) Vorobev reports the occurrence of *Agamospirura* in the intestine of geese, ducks and chickens. These encapsulated larvae measured less than 3.2 mm. and when fed to cats, puppies and ducks did not produce the adult form. C.R.

(324l) The authors report the occurrence of *Filicollis anatis* in the Ukraine and state that among ducks five to six months old it may produce a mortality reaching 50%. C.R.

324—Veterinariya (cont.)

- m. GADZHIEV, K. S., 1954.—[Epizootology of moniezia and dictyocaulias among lambs in Azerbaidzhan mountain merino and bozakh breeds.] [Abstract.] 31 (4), 24-25. [In Russian.]
- n. GADZHIEV, K. S., 1954.—[Seasonal dynamics of dictyocaulias in calves in Azerbaidzhan SSR.] [Abstract.] 31 (4), 25. [In Russian.]
- o. GUSEV, N. I., 1954.—[Paramphistomiasis of adult cattle.] [Abstract.] 31 (4), 25. [In Russian.]
- p. EGOROV, I. F., 1954.—[Longevity of *Fasciola hepatica*.] [Abstract.] 31 (4), 25. [In Russian.]
- q. ZHDANOV, A. P. & GAIFUTDINOVA, G. M., 1954.—[Metacercariae of *Alaria* in the muscles of badgers in Bashkir ASSR.] [Abstract.] 31 (4), 25. [In Russian.]
- r. KUSHNIR, M. M., 1954.—[Treatment of macracanthorhynchiasis with *Ledum palustre*.] [Abstract.] 31 (4), 25-26. [In Russian.]
- s. MIRONOV, A. N., 1954.—[Treatment of thelaziasis in cattle with lysol.] [Abstract.] 31 (4), 26. [In Russian.]
- t. OPARIN, P. G., 1954.—[Prophylactic measures against *Thelazia* in cattle.] [Abstract.] 31 (4), 26. [In Russian.]

(324m) The author found that there was no difference in the susceptibility of Azerbaidzhan mountain merino and bozakh breeds of sheep to *Moniezia* and *Dictyocaulus*. C.R.

(324n) The author carried out observations on two age groups of calves, one group born during the current year and the other group yearlings. He found that the maximum extent of infection with *Dictyocaulus* was reached in June in both groups; in the first group it fell to 2% in November and in the second group it disappeared by September. Adult cattle were only occasionally infected. C.R.

(324o) Gusev describes the occurrence of *Paramphistomum cervi* in cattle, and the pathogenic effects. Treatment with ichthyol, carbon tetrachloride and hexachlorethane was ineffective. C.R.

(324p) A sheep, when two years old, was infected with *Fasciola hepatica*; when slaughtered eight years later it had 22 flukes. The possibility of another infection occurring during this time was excluded. C.R.

(324q) The authors found the muscles of five badgers to be infected with metacercariae of *Alaria*. When these larvae were fed to a puppy eggs were found 33 days later in the faeces and when the dog was killed 70 specimens of *Alaria alata* were found in the small intestine. C.R.

(324r) Kushnir prepared an infusion of one kg. of dried *Ledum palustre* in 40 litres of hot water. After 8-9 hours this was filtered through butter muslin and given twice daily (mixed with food) for five days. He gave 100-150 c.c. for pigs three to four months old, 200-250 c.c. for pigs five to six months old and 300-400 c.c. for adult pigs. He also used an extract, prepared from 1-1.3 kg. of dried *Ledum palustre* in 60 litres of boiled potatoes. This mash was given in a dose of 300-400 gm. to pigs two-and-a-half to four months old, 700-900 gm. to pigs five to seven months old and 1-1.2 kg. to adult pigs, twice daily for six days. This treatment gave good results with no toxic effects and on the third or fourth day dead acanthocephala were found in the faeces. C.R.

(324s) Mironov reports that good results were obtained using an 0.5% aqueous solution of lysol against *Thelazia* in cattle. The treatment must be repeated four times. C.R.

(324t) The author found that 1:1,500 solution of iodine applied twice is a very effective measure against *Thelazia rhodesii*. C.R.

(324u) Ryazantsev treated 1,038 horses with carbon tetrachloride and found it effective in 94.7% of cases of *Parascaris equorum*, but only in 28.4% of strongyle infections. Side effects were found in 11.7% of the horses. He recommends that this treatment should be combined with the use of Glauber's salt as a laxative. C.R.

324—Veterinariya (cont.)

- u. RYAZANTSEV, V. F., 1954.—[Efficacy of carbon tetrachloride against parascariasis and strongylasis of horses.] [Abstract.] 31 (4), 26. [In Russian.]
- v. SVADZHYAN, P. K., 1954.—[Efficacy of thymol against *Dicrocoelium* in sheep.] [Abstract.] 31 (4), 26-27. [In Russian.]
- w. TIKHOMIROV, S. I., 1954.—[Control of *Dictyocaulus* in calves.] [Abstract.] 31 (4), 27. [In Russian.]
- x. PAVLOVICH, I. K., 1954.—[Longevity of eggs of *Dicrocoelium dendriticum*.] [Abstract.] 31 (4), 27. [In Russian.]
- y. KOTELNIKOV, G. A., 1954.—[*Filicollis* in domestic ducks.] 31 (6), 30-32. [In Russian.]
- z. NEVSKI, L. S. & PUGOVKINA, A. A., 1954.—[Diagnosis of cysticerci in beef and pork.] 31 (6), 58. [In Russian.]

(324v) The author did not find thymol effective against *Dicrocoelium dendriticum* in his experiments carried out on three sheep. He gave doses of 0.15 gm., 0.25 gm. and 0.3 gm. per kg. body-weight, the first and second doses twice a day and the third once a day for three days.

C.R.

(324w) Tikhomirov kept calves for the first year of their lives in a byre with a fenced run and found there was no *Dictyocaulus* infestation.

C.R.

(324x) Pavlovich found that eggs of *Dicrocoelium dendriticum* in faeces when kept in the laboratory retained their viability for five years, while those kept outside were viable for more than 16 months.

C.R.

(324y) Kotelnikov in studying the life-cycle of *Filicollis anatis* found that the intermediate host (*Asellus aquaticus*) ingests the eggs of this acanthocephalan together with faecal matter from ducks. The shell of the egg is destroyed and the larva actively penetrates into the wall of the gut and eventually into the body-cavity. In the body-cavity it passes through three stages, acanthor (which differs very little from the larva in the egg), preacanthella, and acanthella which is the third-stage infective larva with a well developed proboscis. This development takes 25-30 days at 24°C. to 26°C. or up to 40 days at 17°C. Ducks become infected by ingesting *Asellus* and, in Kotelnikov's experiments, the eggs of *Filicollis anatis* were found in the faeces of ducks one month after infection. He describes the pathogenicity, which is particularly severe among ducklings, and considers wild ducks to be source of this infestation.

C.R.

(324z) The authors, who examined meat brought to Moscow markets from the provinces, summarize in a table the localizations of cysticerci in the animals. They regret that their data are incomplete, as in most cases the carcasses were without head and heart, and very often only small pieces of meat were brought, so that it was not easy to establish to which part of the animal they belonged.

C.R.

325—Veterinářství. Brno.

- a. SKRYABIN, K. I., 1954.—"Helminthologie ve veterinární medicíně." 4 (1), 5-8.

326—Veterinary Medicine.

- a. GUTHRIE, J. E., 1954.—"Critical test with cadmium anthranilate as an ascaricide in swine." 49 (10), 413-418.
- b. SAN AGUSTIN, O. D., 1954.—"Filarisis in A.F.P. war dogs." 49 (10), 429-431, 434.
- c. SHOHO, C., 1954.—"Prophylaxis and therapy in epizootic cerebrospinal nematodiasis of animals by 1-diethylcarbonyl-4-methyl-piperazine dihydrogen citrate: report of a second field trial." 49 (11), 459-462, 464.
- d. GUTHRIE, J. E., 1954.—"Further observations on the efficacy of cadmium anthranilate as an ascaricide in swine." 49 (11), 500.

(326a) Cadmium anthranilate was found to show marked ascaricidal activity in tests on 53 infected pigs. The drug should be fed in the ration at a concentration of 0.066% for three consecutive days. One shoat was given ten times the dosage of the drug for four days

and eleven hogs were treated for a period of fourteen weeks. In neither case was there untoward effect except reduced weight gains in the latter. Cadmium was found to be retained in minute quantities in the kidney and liver of treated swine but this was gradually eliminated during the month following treatment. Eating pork from a shoat continually dosed for 71 days had no adverse effects on humans, neither was a dog nor fourteen white rats affected by eating tissues containing cadmium from treated pigs. Preliminary experiments indicate that the drug may safely be used in food including that given to pregnant sows. D.M.

(326b) In 130 cases of canine filariasis the maximum and minimum numbers of intraperitoneal injections of foudin required to clear the peripheral blood of microfilariae were 16 and four respectively. Re-examination four to eight months later showed only 19% again positive. Those treated orally with 400 mg. of caricide three times daily for two to three weeks were all still negative after eight months. In the 25 cases which died, living heart worms were found in the heart, lungs and pulmonary artery, although they had not shown microfilariae in the peripheral blood. The need for close clinical supervision in conjunction with medication to improve condition is stressed. It is pointed out that beneficial results in heavily infected animals are only temporary and that heavily infected dogs in poor condition should not be treated as the result may be fatal. D.M.

(326c) The report gives further evidence of the effectiveness of caricide in preventing cerebrospinal nematodiasis in sheep and goats for a period of three weeks after an oral dose of 40 mg. per kg. body-weight. It is thought that this will also apply to horses, but it has not yet been experimentally proved. There is good clinical evidence that a higher dosage of the drug will cure many cases in sheep and goats where neural damage is not too great. D.M.

(326d) The author has already shown cadmium anthranilate, at a concentration of 0.066%, to be successful in the removal of *Ascaris lumbricoides* from swine, and he now reports experiments in which it was fed in the ration at a concentration of 0.044% to 54 parasitized pigs over a 72-hour period. Of a total of 912 ascarids present, 93.9% were eliminated by the treatment. D.M.

327—Veterinary Record.

- a. HORTON-SMITH, C. & LONG, P. L., 1954.—“The occurrence of the fluke *Plagiorchis notabilis*, Nicoll 1909 in the small intestine of a domestic fowl (*Gallus gallus*).” 66 (41), 611.
- b. JARRETT, W. F. H., MCINTYRE, W. I. M. & URQUHART, G. M., 1954.—“Husk in cattle. A review of a year's work.” 66 (44), 665–676. [Discussion (45), 692–695.]
- c. BETTS, A. O., 1954.—“*Ascaris lumbricoides* as a cause of pneumonia in pigs.” 66 (48), 749–751.

(327a) Thirty-five mature flukes, identified as *Plagiorchis notabilis* Nicoll, 1909, were recovered from the small intestine of a pullet from Montgomeryshire, Wales. This is the first record of the occurrence of any species of *Plagiorchis* in domestic fowls in Britain. D.M.

(327b) This is an interim report of the authors' work on husk commenced in the summer of 1952. The incidence of husk in the west of Scotland is considered. Of all the bovine deaths examined in this area, 50% were attributable to husk and out of 109 cases in the first series, 46 involved adults. In the autumn of 1953 the incidence of the disease was highest in September although the highest ratio of adults to stirks was in October. Experiments showed that *Dictyocaulus viviparus* larvae can survive for 13 months on a pasture. The problem of carriers is discussed but the experimental results are not yet available. The epidemiology and course of the disease in adults and calves are described. The significance of faecal counts is considered. Examination of all the group is important. If results are negative or below 50 per gm., the symptoms may be due to the migration of the immature larval stages, cuffing

pneumonia, the existence of widespread epithelialization of alveoli, or persistent pneumonia as a sequel to infection with lungworms. The account indicates that part of the dyspnoea shown by infected animals is due to other factors besides bronchial obstruction by the worms and this must be considered when interpreting faecal larval counts. A description of experimental bronchitis in calves is followed by field observations and experimental work on indoor husk. Groups of housed calves often suffer from intermittent coughing which was found in most cases to be due to culling pneumonia. Previously [Jarrett *et al.* 1953, for abstract see Helm. Abs., 22, No. 58a] no cases of parasitic bronchitis were found unaccompanied by the characteristic hyperplastic lymphocytic cuffs, but several outbreaks have now been found where these lesions were absent. Systems of control of culling pneumonia and parasitic bronchitis are suggested. For the former, individual rearing of the calves is best and for the latter a policy of strict rotational grazing is essential. Experiments with phenothiazine indicate that small daily doses reduce infection. D.M.

(327c) Although it is commonly thought that migrating larvae of *Ascaris lumbricoides* are responsible for pneumonia of the dependent parts of the lungs in pigs and the associated coughing, examination of 90 composite faecal samples from 18 herds showed that only five samples from three of these herds contained *A. lumbricoides* ova. The lungs of two of these three herds were examined post mortem. There were no haemorrhages. The lesions were identical with those of pneumonia virus. Six pigs were then infected experimentally. Each pig received from 250,000 to 500,000 embryonated *Ascaris* ova. Haemorrhages were abundant throughout the lungs but there were no signs of lobar pneumonia, the main damage being in the liver. The incidence of adult *Ascaris* in pigs slaughtered at bacon factories was found to be low and unrelated to the presence or absence of pneumonia. These results justify the conclusion that many instances diagnosed as *Ascaris* pneumonia are cases of virus pneumonia. R.T.L.

328—Wasmann Journal of Biology.

- a. MEYER, M. C. & MOORE, J. P., 1954.—“Notes on Canadian leeches (Hirudinea), with the description of a new species.” 12 (1), 63–96.

(328a) Meyer & Moore bring together the determinations of the Canadian leeches which had been assembled by Dr. J. Oughton at the Royal Ontario Museum of Zoology, and material which had been contributed by other workers. Brief notes are given on their occurrence and distribution in Canada and detailed descriptions are given of *Placobdella papillifera* and *Theromyzon rude*. One new species, *Oculobdella lucida* n.sp., is described and figured by Moore. It differs from the genotype and only species, *O. socimulcensis* (Caballero, 1932) in that it is quite smooth and has a male-female interval of two annuli. A check-list of all known Canadian species and the regions from which they have been reported is set out and new records for individual Canadian provinces are indicated. R.T.L.

329—West African Medical Journal.

- a. CROSSKEY, R. W., 1954.—“Onchocerciasis in the Galma Valley area, northern Nigeria.” 3 (2), 75–79.

(329a) Crosskey examined 3,008 people, aged 3 years and over, during a survey of onchocerciasis in the Galma river region, Northern Nigeria. 1% of the subjects were totally blind, 11% bore nodules and 37% yielded skin-snips with microfilariae. The females of *Simulium damnosum*, of which 20% were found infective at the period of highest rainfall, are probably the only vectors in the Galma focus. The author discusses the incidence of onchocerciasis in relation to age, sex, locality and occupation; he records the first definite case of *S. bovis* biting man. M.MCK.

330—Wiener Medizinische Wochenschrift.

- a. FALK, W. & KIRCHER, W., 1954.—“Ueber die Ascariden-Intoxikation im Kindesalter.” 104 (8), 153-156.

(330a) Falk & Kircher report five cases of severe illness in children aged between one and two years due to *Ascaris* infection. The most important symptoms were circulatory disturbances and pronounced toxic effects. There was also enlargement of the liver. All of the children expelled large numbers of *Ascaris* (up to over 200) during treatment; all recovered. *Ascaris* toxins are considered to have caused the illness. “Ascaridol” Bayer was found to be effective in treatment as also was chenopodium oil; no marked success was obtained with antihistamines. A.E.F.

331—Zeitschrift für Ärztliche Fortbildung.

- a. WINKLER, W. F., 1954.—“Oxyuren—und kein Ende.” 48 (5), 164-166.

332—Zoologicheskii Zhurnal.

- a. SHULMAN, S. S., 1954.—[Specificity of fish parasites.] 33 (1), 14-25. [In Russian.]
 b. BIKHOVSKI, B. E. & NAGIBINA, L. F., 1954.—[A new genus of marine monogenetic trematode from the Pacific.] 33 (1), 30-38. [In Russian.]
 c. GVOZDEV, E. V., 1954.—[Helminths of *Tetraogallus himalayensis* Gray, 1842.] 33 (1), 39-43. [In Russian.]
 d. PETROCHENKO, V. I., 1954.—[The role of *Galba truncatula* in the distribution of fascioliasis.] 33 (1), 44-49. [In Russian.]
 e. MATEKIN, P. V., TURLIGINA, E. S. & SHALAEVA, N. M., 1954.—[Contribution to the biology of larvae of protostrongylid parasites of goats and sheep, and epizootology of protostrongylidiasis in Central Asia.] 33 (2), 373-394. [In Russian.]
 f. PETRUSHEVSKI, G. K. & KOGTEVA, E. P., 1954.—[Influence of parasitic diseases on fish fattening.] 33 (2), 395-405. [In Russian.]
 g. DEKSBACH, N. K. & SHCHUPAKOV, I. G., 1954.—[Ligulidae in fish of the water-reservoir in Ural and Trans-Ural.] 33 (3), 544-548. [In Russian.]
 h. EPSHTEIN, V. M., 1954.—[Some peculiarities in water metabolism in fresh-water leeches.] 33 (3), 549-555. [In Russian.]
 i. BELYAEVA, M. Y., 1954.—[Natural focus of infection of trichinellosis in the region of the Bialovezha game reserve.] 33 (3), 714-715. [In Russian.]

(332a) Shulman considers host specificity to be one of the basic problems in contemporary parasitology. He discusses this and concludes that there are five main factors which affect the development of host specificity, namely, the close contact of the parasite with its host, the degree of morphological and physiological adaptation of the parasite to the host and of morphological, physiological and oecological adaptation of host to parasite, time, and the relative stability of the parasite's environment and permanency of its food supply. Shulman concludes that host specificity is not permanent but is constantly evolving. C.R.

(332b) The authors describe in great detail *Pseudoanthocotyle pavlovskyi* n.g. n.sp., from the gills of *Scomber canagurta* from Japanese waters. This species differs from other members of the family Mazocraeidae, *Mazocraes* and *Octostoma*, by the presence of a disproportionately developed fourth pair of clamp-like suckers. The diagnosis of the new genus is as follows: Mazocraeidae without vaginal canals; genital atrium with chitinous armature consisting of rows of hooks, two of which are larger than the others; the attachment armature consists of three pairs of hooks, three pairs of small clamp-like suckers, and one pair of clamp-like suckers which are many times larger than the first three pairs. The internal structure is similar to *Octostoma*. The new genus is also differentiated from *Anthocotyle*. C.R.

(332c) From *Tetraogallus himalayensis*, Gvozdev records *Postharmostomum gallinum*, *Corrigia skrjabini*, *Brachylecithum tetraogalli*, *Hymenolepis fedtschenkowi*, and *Rhabdometra dogieli* n.sp. with detailed description (but no differential diagnosis from other species of this

genus), *Ganguleterakis altaica*, *Ascaridia skrjabini* and *Capillaria* sp. Out of eight examined only one was free from infestation. At the end of this paper Gvozdev gives a list of parasites from all the species of *Tetraogallus* recorded in Russia.

C.R.

(332d) Petrochenko examined (over an area and at various periods of the year) the following snails, *Galba truncatula*, *G. palustris*, *Radix ovata*, *R. pereger*, *Limnaea stagnalis*, *Physa fontinalis* and *Succinea pfeifferi*. Larvae of *Fasciola hepatica* were found only in *G. truncatula*. He found that rediae and cercariae overwinter in snails in large numbers and in the following year become a source of infestation of animals with *Fasciola*. In his opinion snail destruction may give the best results in controlling liver-fluke, particularly if applied in the spring when snails reappear in large numbers and in such biotopes as canals, small pools, in marshes and near the watering places of animals.

C.R.

(332e) The authors report the distribution and intensity of infestation with protostrongyles and *Dictyocaulus filaria* in the Soviet Republics of Central Asia. In their studies on the bionomics of larvae in the preinfective stage they found that larvae of *Protostrongylus hobmaieri*, *P. kochi*, *P. raillieti*, *Cystocaulus nigrescens* and *Muellerius capillaris* in faeces and on grass can live more than a year. The larvae can survive for a similar period in the intermediate hosts. They found that the land snails are common on pastures (except on Alpine grazing and submountainous plains) of sheep and goats. In their opinion the lack of effective control measures of protostrongyles in the final host and the impossibility of controlling intermediate hosts, makes it advisable to graze sheep and goats in alpine pastures and in submountainous plains where no intermediate hosts are found. Hay for use as winter feed should be made from subalpine grassland and steppes.

C.R.

(332f) In their studies on the influence of parasites on fish nutrition, Petrushevski & Kogteva come to the conclusion that *Echinorhynchus gadi* and *E. salmonis* definitely reduce the fattening of *Gadus morrhua morrhua* n. *hiemalis* and *Coregonus lavaretus baeri* n. *ladogae*. Larvae of *Tetracotyle coregoni* parasitic in the heart of *Coregonus lavaretus maraenoides* also reduce its fattening. The infestation of the liver of *Gadus morrhua calarius* with larvae of *Contracaecum aduncum* produces great reduction, not only in the fattening of the fish, but also in the fat content of the liver. They noticed also that *Caryophyllaeus fimbriceps* produces a sharp decline in the fattening of carp in breeding ponds. Slight reduction in fattening takes place in *Myoxocephalus scorpius* and *M. quadricornis* infested with *Anisakis* sp., *Terranova* (*Porrocaecum*) *decipiens* and *Bothriocephalus scorpii*, but there was no reduction in fattening in *Salmo salar* infested with *Eubothrium crassum*, in *Acerina cernua* infested with *Tetracotyle variegata* and in *Osmerus eperlanus* infested with *Cystidicola farionis*.

C.R.

(332g) The authors stress the increase in distribution of liguliasis in fish in lakes and ponds in the Ural and Trans-Ural. They found that *Ligula* measure from 2.5 cm.-25.5 cm. in length and live 2-3 years. In small lakes they recommend systematic killing of birds (the final host) feeding on fish, otherwise there is no other method of destruction of this parasite which reduces considerably the growth of fish.

C.R.

(332h) Epshtein studied the water metabolism among the various leeches of the genera *Erpobdella*, *Hirudo* and *Glossiphonia*. The maximum loss of moisture in leeches living in permanent water and in water which dries periodically is very different. The speed of losing water depends on the dimensions of the body. Small forms lose water much more quickly than do large ones. The speed of swelling of leeches in water, dried to the possible maximum, depends not only on the peculiarities of the species living under various conditions, but also on the dimensions of the body. Epshtein concludes that the species of leeches living in various conditions, e.g. permanent or drying water reservoirs are characterized by comparatively slight differences in the water content of the body.

C.R.

(332i) Belyaeva reports the occurrence of *Trichinella spiralis* in the Forest of Bialovezha among the wolves, foxes, lynxes and dogs. She also found them in shrews and moles. In the inhabited area around the forest she found mice and pigs also infested. In her opinion the bodies of wild carnivores are responsible for the distribution of trichinelliasis. C.R.

333—Zoologischer Anzeiger.

- a. OSCHÉ, G., 1954.—“Über Verhalten und Morphologie der Dauerlarven freilebender Nematoden.” 152 (3/4), 65–73.
- b. ALLGÉN, C. A., 1954.—“Über eine neue Art der Gattung *Xennella* Cobb 1920, *Xennella filicaudata* n.sp. aus Südgeorgien.” 152 (3/4), 93–94.
- c. ALLGÉN, C. A., 1954.—“Über eine weitere neue Desmoscolecide, *Desmoscolex klatti* n.sp. von den Falkland Inseln.” 152 (3/4), 94–96.
- d. MEYL, A. H., 1954.—“*Nygolaimus husmanni* n.sp., ein neuer Nematode aus dem Grundwasser Nordwestdeutschlands, sowie Bemerkungen über die bisher in Europa gefundenen Arten der Gattung *Nygolaimus* Cobb 1913.” 152 (5/6), 127–133.
- e. ALLGÉN, C. A., 1954.—“*Micoletzkyia*, eine bemerkenswerte marine Nematodengattung.” 152 (5/6), 134–137.
- f. ANDRASSY, I., 1954.—“Über einige von Daday beschriebene Nematoden-Arten.” 152 (5/6), 138–144.
- g. OSCHÉ, G., 1954.—“Ein Beitrag zur Kenntnis mariner *Rhabditis*-Arten.” 152 (9/10), 242–251.

(333a) Osche discusses the behaviour and morphology of the dauerlarvae of species of *Rhabditis*, comparing the different types of waving motions observed and the casting off or retention of the moulted larval cuticle. He considers the origins of the various types of behaviour and their relation to the life-histories of the nematodes. M.T.F.

(333b) Allgén describes *Xennella filicaudata* n.sp. collected in South Georgia by the Swedish South-Polar Expedition of 1901–03. This species differs from *X. suecica* in that the tail narrows rapidly, the posterior two-thirds being filiform with a rounded extremity. The vulva is median and there are paired ovaries. M.T.F.

(333c) In material collected on the same expedition as in the previous paper, but in the Falkland Islands, Allgén finds *Desmoscolex klatti* n.sp. which differs from *D. falklandiae* in having (i) 16 instead of 18 strongly developed body-rings, (ii) a distinctly rounded head with slender submedian bristles, (iii) a short terminal ring, (iv) strong bristles on the body. There is so thick a coating of minute sand particles that it is impossible to see the internal structure. M.T.F.

(333d) *Nygolaimus husmanni* n.sp., from soil-water in north-west Germany, is described and figured from a single female. It is distinguished from other species of the genus by its much greater length (7.3 mm.) and by its short, hemispherical tail which is one anal body-width long and slightly broader than the body-width immediately in front of the anus. The vulva is characteristic, the lips not being cuticularized and very slightly prominent. $V=40.3\%$. Meyl discusses the relationships of the new species and gives a key to the European species of the genus. M.T.F.

(333e) Allgén agrees with Ditlevsen that *Micoletzkyia* should be placed in the family Phanodermatidae, a conclusion drawn also by Schuurmans Stekhoven Jr. He describes and figures *M. elegans* Ditlevsen and also two new species, viz., *M. falklandiae* n.sp. and *M. austro-georgiae* n.sp. The former is described from one young female found in west Falkland in 1902: it differs from *M. elegans* in its smaller size and in the shape of the tail which appears to be short although the anus could not be seen, tapers abruptly and is bent sharply at right angles. *M. austro-georgiae* n.sp., of which one female and one larva were found in South Georgia, differs in the shape of the tail which is conical in the anterior half, tapering strongly to a thread-like posterior half, about $\frac{1}{3}$ of anal diameter across. The vulva and ovaries were not seen. M.T.F.

(333f) Andrassy has examined many of Daday's preparations, comparing them with Daday's descriptions and drawings. He gives detailed descriptions with drawings of *Desmolaimus balatonicus* Daday, 1894 [syn. *Campydora balatonica* (Daday, 1894) n.comb.] and *Hoplolaimus tylenchiformis* Daday, 1905. For nine other species he gives notes and discusses their synonymy; finally he gives a list of the species discussed and their complete synonymy. M.T.F.

(333g) Osche discusses the status of the species and races of *Rhabditis* which have been described as marine. Of the five races of *R. marina* he considers that only *R. marina septentrionalis* Steiner, 1916 is valid, the others being synonyms. He describes and illustrates *R. (Choriorhabditis) marina marina* Bastian, 1865 and *R. (Mesorhabditis) ocypodis* Chitwood, 1935, giving the synonymy. M.T.F.

334—Zooprofilassi.

- a. CASAROSA, L., 1954.—"Prime osservazioni sulla cistocaulosi degli ovini in Italia." 9 (3), 153-164, 167. [English & French summaries pp. 164, 167.]

(334a) Casarosa reports for the first time *Cystocaulus nigrescens* [*Protostrongylus nigrescens*] in sheep in Italy. He redescribes the species and gives a detailed account of the histopathology of the lung. M.MCK.

NON-PERIODICAL LITERATURE

335—OPINIONS AND DECLARATIONS RENDERED BY THE INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE.

- a. INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE, 1954.—"Opinion 272. Designation, under the Plenary Powers, of a type species for the genus *Taenia* Linnaeus, 1758 (Class Cestoidea) in harmony with accustomed nomenclatorial usage (validation of an error in Opinion 84)." 6 (4), 51-62.

336—PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON SCIENTIFIC ASPECTS OF MUSHROOM GROWING (2nd), Gembloux, June 16-20, 1953.

- a. CAIRNS, E. J., 1954.—"Relationship of the environmental moisture conditions of the mushroom-spawn nematode, *Ditylenchus* sp., to its control by heat." pp. 161-164. [French summary p. 164.]
 b. CAIRNS, E. J., 1954.—"Effects of temperature upon pathogenicity of the mushroom-spawn nematode, *Ditylenchus* sp." pp. 164-167. [French summary p. 167.]
 c. KUX, M. & REMPE, H., 1954.—"Experience with nematodes in sawdust-compost." pp. 175-177. [French summary pp. 176-177.]

(336a) Cairns shows that *Ditylenchus* sp. in the anabiotic state is relatively more resistant to death by heat than when it is in an active state. From thermal death curves he shows that for 24 hours exposure active eelworms are killed at about 41°C., whereas those in anabiosis only succumb at over 50°C. J.B.G.

(336b) Experiments show that temperature plays an important part in determining the rate of destruction of mushroom mycelium in compost by influencing the reproduction and activity of the nematodes responsible. The optimal temperatures for spawn growth are similar to those for maximum destruction by eelworms. The importance of eliminating or reducing the numbers of *Ditylenchus* sp. in new compost is stressed. J.B.G.

(336c) Damage by *Rhabditis*-like nematodes to mushroom mycelium is not immediate but numbers of nematodes build up and there is a sudden break down of mycelium. This is interpreted as an accumulation of toxins or ferments derived from the nematodes. Pasteurization will regenerate infested compost. J.B.G.

- 337—UNITED STATES DEPARTMENT OF AGRICULTURE, 1954.—“Index-catalogue of medical and veterinary zoology. Supplement 2. Authors: A to C.” Washington, D.C.: U.S. Government Printing Office, pp. 318-457.

BOOK REVIEW

- 338—HACKETT, C. J., 1954.—“Manual of medical helminthology.” London: Cassell & Co. Ltd., ix + 330 pp., 18/6d.

The legends which accompanied the diagrams and exhibits in the helminthological section of the Wellcome Museum of Medical Science have now been published in book form with the intention of presenting a brief statement of knowledge useful to the man in the field. It is stressed that the book is not intended for use in the museum but rather by doctors in the tropics. The drawings which they originally explained are not reproduced but a small number of admirably drawn new figures have been supplied by Mr. F. R. N. Pester. Each infection is briefly dealt with under the headings: General, Aetiology, Epidemiology, Pathology, Clinical Diagnosis, Treatment, Prognosis and Prevention, supplemented by a series of tables giving the differential diagnosis of the common helminths and their eggs and of the microfilariae, and by three charts setting out the taxonomy of the various genera. The setting of the book is a fine example of the printer's art but the segregation of Museum legends in book form on the same page results in a number of repetitions and inconsistencies not so noticeable on a museum wall. Perhaps, after all, those for whom it is intended would have been better advised to take the volume to the Wellcome Museum before going to the tropics. R.T.I

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